

Access DB# 121586

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: DR. N. Z. D. W. Examiner #: 69332 Date: 5/7/64
 Art Unit: 711 Phone Number 302-681 Serial Number: 10/616588
 Mail Box and Bldg/Room Location: 6071 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): _____

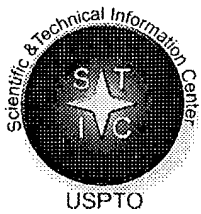
Earliest Priority Filing Date: _____

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Formule of claim 1. Charles

STAFF USE ONLY

| | Type of Search | Vendors and cost where applicable |
|------------------------------------|-----------------------|-----------------------------------|
| Searcher: _____ | NA Sequence (#) _____ | STN _____ |
| Searcher Phone #: _____ | AA Sequence (#) _____ | Dialog _____ |
| Searcher Location: _____ | Structure (#) _____ | Questel/Orbit _____ |
| Date Searcher Picked Up: _____ | Bibliographic _____ | Dr. Link _____ |
| Date Completed: _____ | Litigation _____ | Lexis/Nexis _____ |
| Searcher Prep & Review Time: _____ | Fulltext _____ | Sequence Systems _____ |
| Clerical Prep Time: _____ | Patent Family _____ | WWW/Internet _____ |
| Online Time: _____ | Other _____ | Other (specify) _____ |



STIC Search Report

EIC 1700

STIC Database Tracking Number: 121586

TO: Duc Truong

Location: 10071

Art Unit : 1711

May 13, 2004

Case Serial Number: 10/616168

From: Barba Koroma

Location: EIC 1700

REM EO4 A30

Phone: 571 272 2546

barba.koroma@uspto.gov

Search Notes

Examiner Truong,

Please find attached results of the search you requested. Various components of the claimed invention as spelt out in the claims were searched in REGISTRY and CAPLUS databases.

For your convenience, titles of hits have been listed to help you peruse the results set quickly. This is followed by a detailed printout of records. Please let me know if you have any questions.

Thanks.



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher or contact:*

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- I am an examiner in Workgroup: Example: 1713
- Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28



=> file reg

| COST IN U.S. DOLLARS | SINCE FILE ENTRY | TOTAL SESSION |
|--|---------------------|------------------|
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Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES: 12 MAY 2004 HIGHEST RN 681425-81-0
DICTIONARY FILE UPDATES: 12 MAY 2004 HIGHEST RN 681425-81-0

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> file caplus

| COST IN U.S. DOLLARS | SINCE FILE ENTRY | TOTAL SESSION |
|--|---------------------|------------------|
| FULL ESTIMATED COST | 0.42 | 550.85 |
| DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) | SINCE FILE ENTRY | TOTAL SESSION |
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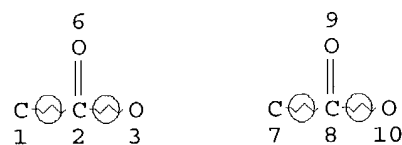
FILE COVERS 1907 - 13 May 2004 VOL 140 ISS 20
FILE LAST UPDATED: 12 May 2004 (20040512/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

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L17

STR



NODE ATTRIBUTES:

| | | | | | |
|----------------------------|----|----|----|----|----|
| NSPEC | IS | R | AT | 1 | |
| NSPEC | IS | R | AT | 2 | |
| NSPEC | IS | R | AT | 3 | |
| NSPEC | IS | R | AT | 7 | |
| NSPEC | IS | R | AT | 8 | |
| NSPEC | IS | R | AT | 10 | |
| CONNECT | IS | E2 | R | AT | 3 |
| CONNECT | IS | E2 | R | AT | 10 |
| DEFAULT MLEVEL IS ATOM | | | | | |
| DEFAULT ECLEVEL IS LIMITED | | | | | |

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 8

STEREO ATTRIBUTES: NONE

| | | |
|-----|-------|--|
| L18 | SCR | 2043 |
| L20 | 31103 | SEA FILE=REGISTRY SSS FUL L17 AND L18 |
| L21 | 29018 | SEA FILE=CAPLUS ABB=ON PLU=ON L20 |
| L22 | 119 | SEA FILE=CAPLUS ABB=ON PLU=ON L21 AND CYCLIC(3A)ESTER |
| L23 | 104 | SEA FILE=CAPLUS ABB=ON PLU=ON L22 AND POLYMERIZ? |
| L24 | 100 | SEA FILE=CAPLUS ABB=ON PLU=ON L23 AND PREP/RL |
| L26 | 64 | SEA FILE=CAPLUS ABB=ON PLU=ON L24 AND ESTER?(4A)?POLYMERIZATI ON? |
| L28 | 1 | SEA FILE=CAPLUS ABB=ON PLU=ON 2004:60578/AN |
| L30 | 64 | SEA FILE=CAPLUS ABB=ON PLU=ON L26 OR L28 |
| L31 | 12120 | SEA FILE=CAPLUS ABB=ON PLU=ON L21(L) (IMF OR PREP OR SPN)/RL |
| L32 | 61 | SEA FILE=CAPLUS ABB=ON PLU=ON L30 AND L31 |

=> d ti 1-61

- L32 ANSWER 1 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI High-molecular-weight aliphatic polyesters and process for producing them
- L32 ANSWER 2 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Bis(amido)titanium complexes having chelating diaryloxo ligands bridged by sulfur or methylene and their catalytic behaviors for ring-opening **polymerization of cyclic esters**
- L32 ANSWER 3 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Process for **copolymerization of cyclic ester** oligomers
- L32 ANSWER 4 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Living **polymerization of cyclic esters** - a route to (bio)degradable polymers. Influence of chain transfer to polymer on livingness
- L32 ANSWER 5 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Aliphatic polyester and manufacture of the polyester in melt extrusion
- L32 ANSWER 6 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Strontium-based initiator system for ring-opening **polymerization of cyclic esters**
- L32 ANSWER 7 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Ring-opening **polymerization** of aliphatic **cyclic esters** by using organic amino calcium catalyst
- L32 ANSWER 8 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Biodegradable Polymersomes
- L32 ANSWER 9 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Polyhydroxycarboxylic acid and its production process
- L32 ANSWER 10 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Ring opening polymerisations of **cyclic esters** and carbonate by rare-earth LnCp₃
- L32 ANSWER 11 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Use of zinc derivatives as **cyclic ester polymerization** catalysts
- L32 ANSWER 12 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Soluble tin(II) macroinitiator adducts for the controlled ring-opening **polymerization** of lactones and cyclic carbonates
- L32 ANSWER 13 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Method for preparing polyesters having intrachain free acid functions
- L32 ANSWER 14 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

- TI Kinetics and mechanism of **cyclic esters polymerization** initiated with covalent metal carboxylates, 5a end-group studies in the model ϵ -caprolactone and L,L-dilactide/tin(II) and zinc octoate/butyl alcohol systems
- L32 ANSWER 15 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
- TI **Polymerizations of Cyclic Esters** Catalyzed by Titanium Complexes Having Chalcogen-Bridged Chelating Diaryloxo Ligands
- L32 ANSWER 16 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
- TI Synthesis of aliphatic polyesters of various architectures by the controlled ring-opening **polymerization of cyclic esters**
- L32 ANSWER 17 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
- TI Control of Mn, Mw/Mn, end-groups, and kinetics in living **polymerization of cyclic esters**
- L32 ANSWER 18 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
- TI Method for preparation of biodegradable aliphatic polyesters by using calcium organic compounds as ring opening **polymerization** catalysts
- L32 ANSWER 19 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
- TI Ring opening **polymerization** of lactides using nucleophilic organic catalysts
- L32 ANSWER 20 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
- TI Mechanistic Comparison of **Cyclic Ester Polymerizations** by Novel Iron(III)-Alkoxide Complexes: Single vs Multiple Site Catalysis
- L32 ANSWER 21 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
- TI First Example of N-Heterocyclic Carbenes as Catalysts for Living **Polymerization: Organocatalytic Ring-Opening Polymerization of Cyclic Esters**
- L32 ANSWER 22 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
- TI Polymers based on heterocyclic monomers, their production and use of stannylenes and germylenes as catalysts therefor
- L32 ANSWER 23 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
- TI **Polymerization of lactide and related cyclic esters** by discrete metal complexes
- L32 ANSWER 24 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
- TI Process for the preparation of polymers of dimeric **cyclic esters**
- L32 ANSWER 25 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
- TI A Novel and Versatile Calcium-Based Initiator System for the Ring-Opening **Polymerization of Cyclic Esters**

- L32 ANSWER 26 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Polymerization** of lactones and D,L-lactide initiated by lanthanum isopropoxide
- L32 ANSWER 27 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Lactide **polymerization** activity of alkoxide, phenoxide, and amide derivatives of yttrium(III) arylamidinates
- L32 ANSWER 28 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Polymerizations** of ϵ -caprolactone and L,L-dilactide initiated with stannous octoate and stannous butoxide - a comparison
- L32 ANSWER 29 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Controlled ring-opening **polymerization** of L-lactide and 1,5-Dioxepan-2-one forming a triblock copolymer
- L32 ANSWER 30 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Copolymers of ϵ -caprolactone and **cyclic esters** of alpha-hydroxyacids and polyurethanes derivable from these polymers
- L32 ANSWER 31 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Synthesis of aliphatic polyesters by controlled ring-opening **polymerization of cyclic esters**.
Characterization, properties, transesterification reactions
- L32 ANSWER 32 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Latexes and microspheres by ring-opening **polymerization**.
Polymerization of cyclic esters
- L32 ANSWER 33 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Controlled **polymerization of cyclic esters**.
Covalent metal alkoxides vs. carboxylates: $\text{Sn}(\text{OC}_4\text{H}_9)_2$ vs. $\text{Sn}(\text{OC}(\text{O})\text{C}_7\text{H}_{15})$ (viz $\text{Sn}(\text{Oct})_2$)
- L32 ANSWER 34 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Titanate-catalyzed ring-opening **polymerization** of **cyclic phthalate ester** oligomers
- L32 ANSWER 35 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Metal complexes with a tridentate ligand, their preparation and use as **polymerization** catalysts
- L32 ANSWER 36 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Direct synthesis of polyester microspheres, potential carriers of bioactive compounds
- L32 ANSWER 37 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Polycarbonate copolyester diols their preparation and use
- L32 ANSWER 38 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Method for preparation of aliphatic polyesters

- L32 ANSWER 39 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Stereochemical aspects of the controlled ring-opening **polymerization** of chiral **cyclic esters**
- L32 ANSWER 40 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI A novel rare earth coordination catalyst for **polymerization** of biodegradable aliphatic lactones and lactides
- L32 ANSWER 41 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Preparation of Group IIIA complexes containing one mono- or di-anionic tridentate ligand and their use as **polymerization** catalysts
- L32 ANSWER 42 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Cyclic ester** preparation and purification by aqueous solvent extraction for preparation of high molecular weight polymers
- L32 ANSWER 43 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Method to produce and purify **cyclic esters**
- L32 ANSWER 44 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI New initiators for the ring-opening **polymerization** of **cyclic esters**
- L32 ANSWER 45 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Bioabsorptive polyester and its production method
- L32 ANSWER 46 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Manufacture of microspheres and latexes of polyesters of low particle-size dispersity
- L32 ANSWER 47 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Synthesis of degradable crosslinked polymers based on 1,5-dioxepan-2-one and crosslinker of bis- ϵ -caprolactone type
- L32 ANSWER 48 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI New type of crosslinking agents for vinyl polymers
- L32 ANSWER 49 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Macromolecular engineering of polylactones and polylactides by ring-opening **polymerization**
- L32 ANSWER 50 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Method to produce and purify **cyclic esters**
- L32 ANSWER 51 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Manufacture and purification of **cyclic esters**
- L32 ANSWER 52 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Evidence for **Ester-Exchange** Reactions and **Cyclic** Oligomers Formation in the Ring-Opening **Polymerization** of Lactide with Aluminum Complex Initiators

L32 ANSWER 53 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Copolymerization of 2,2-dimethyltrimethylene carbonate and **cyclic esters**

L32 ANSWER 54 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Manufacture of biodegradable polyesters

L32 ANSWER 55 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Process for the preparation of tin-free homo- or copolyesters of aliphatic hydroxycarboxylic acids

L32 ANSWER 56 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Preparation of polyester of controlled molecular weight based on the determination of free acid impurities in monomer

L32 ANSWER 57 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Biodegradable polymers. 7th Comm. On the mechanism of ring-opening **polymerization of cyclic esters** of aliphatic hydroxycarboxylic acids by means of different tin compounds

L32 ANSWER 58 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Poly(L-lactide) crosslinked with spiro-bis-dimethylenecarbonate

L32 ANSWER 59 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Process and catalyst for the **polymerization of cyclic esters**

L32 ANSWER 60 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Manufacture of biologically degradable (co)polyesters having controlled molecular weights

L32 ANSWER 61 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
TI Polyimides prepared from carbamic acids

=> d ibib abs hitstr ind total

L32 ANSWER 1 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:333766 CAPLUS
DOCUMENT NUMBER: 140:304686
TITLE: High-molecular-weight aliphatic polyesters and process for producing them
INVENTOR(S): Yamane, Kazuyuki; Kato, Ryo; Ono, Toshihiko
PATENT ASSIGNEE(S): Kureha Chemical Industry Company, Limited, Japan
SOURCE: PCT Int. Appl., 21 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| WO 2004033528 | A1 | 20040422 | WO 2003-JP12882 | 20031008 |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD

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PRIORITY APPLN. INFO.:

JP 2002-295276 A 20021008

AB The process comprises subjecting a (co)polymer produced by ring-opening (co)polymerization of ≥ 1 cyclic ester selected from the group consisting of glycolide and lactides to a chain extension reaction with an oxazoline compound [e.g., 2,2'-m-phenylene bis(2-oxazoline)] to increase the mol. weight of the (co)polymer. The mol. weight of the polymers has been increased to such a degree that the mol. weight increase ratio represented by the ratio (Mw2/Mw1) of the weight-average mol. weight of the (co)polymer after the chain extension (Mw2) to that of the (co)polymer before the chain extension (Mw1) is ≥ 1.10 .

IT 677005-82-2P, Glycolide-2,2'-m-phenylene bis(2-oxazoline) copolymer

RL: IMF (Industrial manufacture); PREP (Preparation)

(preparation of high-mol.-weight aliphatic polyesters by using oxazoline chain extenders)

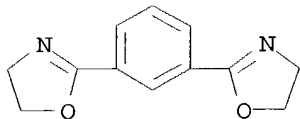
RN 677005-82-2 CAPLUS

CN 1,4-Dioxane-2,5-dione, polymer with 2,2'-(1,3-phenylene)bis[4,5-dihydrooxazole] (9CI) (CA INDEX NAME)

CM 1

CRN 34052-90-9

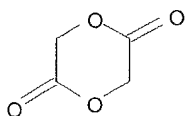
CMF C12 H12 N2 O2



CM 2

CRN 502-97-6

CMF C4 H4 O4



IC ICM C08G063-91
 CC 37-3 (Plastics Manufacture and Processing)
 ST oxazoline chain extender **cyclic ester** polymer;
 glycolide polymer oxazoline chain extender; lactide polymer oxazoline
 chain extender
 IT Polyesters, preparation
 RL: IMF (Industrial manufacture); **PREP (Preparation)**
 (aliphatic; preparation of high-mol.-weight aliphatic polyesters by using
 oxazoline
 chain extenders)
 IT **677005-82-2P**, Glycolide-2,2'-m-phenylene bis(2-oxazoline)
 copolymer
 RL: **IMF (Industrial manufacture); PREP (Preparation)**
 (preparation of high-mol.-weight aliphatic polyesters by using oxazoline
 chain
 extenders)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 2 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:99423 CAPLUS

DOCUMENT NUMBER: 140:321797

TITLE: Bis(amido)titanium complexes having chelating
 diaryloxo ligands bridged by sulfur or methylene and
 their catalytic behaviors for ring-opening
**polymerization of cyclic
 esters**

AUTHOR(S): Takashima, Yoshinori; Nakayama, Yuushou; Hirao,
 Toshikazu; Yasuda, Hajime; Harada, Akira

CORPORATE SOURCE: Graduate School of Engineering, Department of
 Materials Chemistry, Osaka University, Suita, Osaka,
 565-0871, Japan

SOURCE: Journal of Organometallic Chemistry (2004), 689(3),
 612-619

CODEN: JORCAI; ISSN: 0022-328X

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A series of bis(dialkylamido) titanium complexes coordinated by O-E-O
 (E=S, CH₂) chelating bis(aryloxo) ligands, Ti[E(4-Me-6-tBuC₆H₂O)₂](NR₂)₂
 (1: E=S, R = Me; 2: E = S, R = Et; 3: E = CH₂, R = Me; 4: E = CH₂, R =
 Et), were synthesized by the reaction of Ti(NR₂)₄ (R=Me, Et) with
 2,2'-E(4-Me-6-tBuC₆H₂OH)₂ (E = S, CH₂). The crystal structures of
 complexes 2 and 4 were determined by x-ray diffraction study. Complex 2 has a

trigonal bipyramidal structure with the sulfur and nitrogen atom in trans positions and complex 4 has a tetrahedral structure. The complex 2 initiated the controlled **polymerization** of ϵ -caprolactone (I) in toluene at 100°C affording poly-I and poly(L-lactide) with relatively narrow mol. weight distributions. The complex 4 showed higher activity for the **polymerization** of I to give a polymer with a broader mol. weight distribution in comparison with complex 2.

IT 33135-50-1P, Poly(L-lactide)

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(bis(amido)titanium complexes with chelating diaryloxo ligands bridged by sulfur or methylene and their catalytic behaviors for ring-opening **polymerization** of lactide and caprolactone)

RN 33135-50-1 CAPLUS

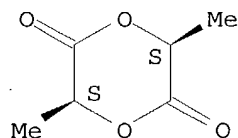
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 75, 78

ST caprolactone lactide ring opening **polymn** catalyst

bisamidotitanium complex diaryloxo

IT Molecular weight

Molecular weight distribution

(bis(amido)titanium complexes with chelating diaryloxo ligands bridged by sulfur or methylene and their catalytic behaviors for ring-opening **polymerization** of lactide and caprolactone)

IT Polyesters, preparation

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(bis(amido)titanium complexes with chelating diaryloxo ligands bridged by sulfur or methylene and their catalytic behaviors for ring-opening **polymerization** of lactide and caprolactone)

IT Crystal structure

Molecular structure

(of bis(amido)titanium complexes with chelating diaryloxo ligands bridged by sulfur or methylene for ring-opening **polymerization** of lactide and caprolactone)

IT **Polymerization** catalysts

- (ring-opening; preparation and properties of bis(amido)titanium complexes with chelating diaryloxo ligands bridged by sulfur or methylene for ring-opening **polymerization** of lactide and caprolactone)
- IT 678986-05-5P 678986-06-6P
RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(bis(amido)titanium complexes with chelating diaryloxo ligands bridged by sulfur or methylene and their catalytic behaviors for ring-opening **polymerization** of lactide and caprolactone)
- IT 25248-42-4P, Poly(.vepsiln.-caprolactone), sru 26161-42-2P, Poly(L-lactide), sru 33135-50-1P, Poly(L-lactide)
RL: PRP (Properties); **SPN (Synthetic preparation)**; **PREP (Preparation)**
(bis(amido)titanium complexes with chelating diaryloxo ligands bridged by sulfur or methylene and their catalytic behaviors for ring-opening **polymerization** of lactide and caprolactone)
- IT 90-66-4 119-47-1 3275-24-9 4419-47-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(bis(amido)titanium complexes with chelating diaryloxo ligands bridged by sulfur or methylene and their catalytic behaviors for ring-opening **polymerization** of lactide and caprolactone)
- IT 444609-23-8P 678986-07-7P
RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(crystal structure; bis(amido)titanium complexes with chelating diaryloxo ligands bridged by sulfur or methylene and their catalytic behaviors for ring-opening **polymerization** of lactide and caprolactone)
- IT 24980-41-4P, Poly(.vepsiln.-caprolactone)
RL: PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**
(preparation and properties of bis(amido)titanium complexes with chelating diaryloxo ligands bridged by sulfur or methylene for ring-opening **polymerization** of lactide and caprolactone)

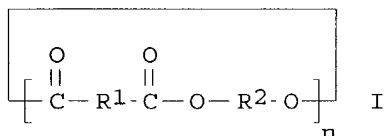
REFERENCE COUNT: 59 THERE ARE 59 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 3 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:60578 CAPLUS
DOCUMENT NUMBER: 140:112165
TITLE: Process for **copolymerization** of **cyclic ester** oligomers
INVENTOR(S): Brugel, Edward G.
PATENT ASSIGNEE(S): E. I. Du Pont De Nemours and Company, USA
SOURCE: PCT Int. Appl., 20 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

Applicant

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|------|-----------------|------|
|------------|------|------|-----------------|------|

 WO 2004007589 A1 20040122 WO 2003-US21742 20030711
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
 CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,
 PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,
 TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG,
 KZ, MD, RU, TJ
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG,
 CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC,
 NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
 GW, ML, MR, NE, SN, TD, TG
 US 2004054124 A1 20040318 US 2003-616168 20030709
 PRIORITY APPLN. INFO.: US 2002-395557P P 20020712
 GI



AB The process comprises contacting under ring opening **polymerization** condition a mixture of ≥ 2 **melted** chemical different **cyclic ester** oligomers I (R1, R2 = (un)substituted hydrocarbylene; n ≥ 1), such as terephthalic acid-diethylene glycol **cyclic ester** dimer and a mixture of terephthalic acid-1,4-butanediol **cyclic ester** dimer and trimer, in the presence of a catalyst (e.g., butyltin chloride dihydroxide) to form a copolyester. The copolyesters formed are especially useful as encapsulants and coatings. In many instances the copolyesters, assuming they are not randomized in later transesterification reactions, have unique microstructures related to the sequencing of repeat units the their polymer chains.

IT 646063-99-2P

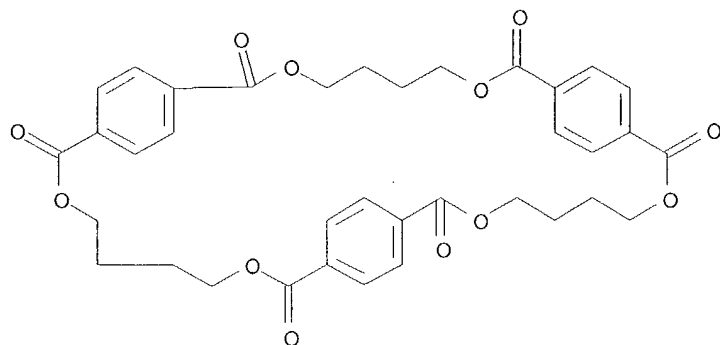
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (process for copolymn. of cyclic ester oligomers)

RN 646063-99-2 CAPLUS

CN 3,8,15,20,27,32-Hexaoxatetracyclo[32.2.2.210,13.222,25]dotetraconta-10,12,22,24,34,36,37,39,41-nonaene-2,9,14,21,26,33-hexone, polymer with 3,6,9,16,19,22-hexaoxatricyclo[22.2.2.211,14]triaconta-11,13,24,26,27,29-hexaene-2,10,15,23-tetrone and 3,8,15,20-tetraoxatricyclo[20.2.2.210,13]octacos-10,12,22,24,25,27-hexaene-2,9,14,21-tetrone (9CI) (CA INDEX NAME)

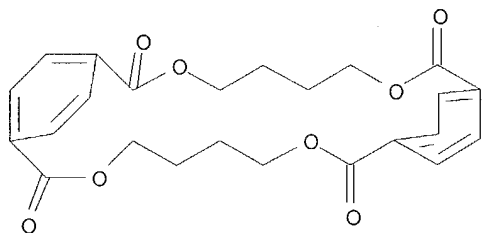
CM 1

CRN 63440-94-8
CMF C36 H36 O12



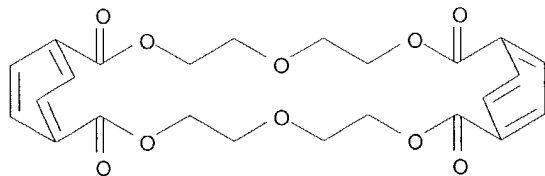
CM 2

CRN 63440-93-7
CMF C24 H24 O8



CM 3

CRN 16104-98-6
CMF C24 H24 O10



IC ICM C08G063-16
ICS C08G063-78; C09D167-02
CC 37-3 (Plastics Manufacture and Processing)

Section cross-reference(s): 38, 42

ST **cyclic ester oligomer copolymn**; terephthalic acid **cyclic ester oligomer copolymn**

IT Polyesters, preparation
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; **USES (Uses)**
(process for **copolymn. of cyclic ester oligomers**)

IT **Polymerization**
Polymerization catalysts
(ring-opening; process for **copolymn. of cyclic ester oligomers**)

IT 13355-96-9
RL: CAT (Catalyst use); **USES (Uses)**
(process for **copolymn. of cyclic ester oligomers**)

IT **646063-99-2P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); **PREP (Preparation)**; **USES (Uses)**
(process for **copolymn. of cyclic ester oligomers**)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 4 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:911808 CAPLUS

DOCUMENT NUMBER: 140:94420

TITLE: **Living polymerization of cyclic esters - a route to (bio)degradable polymers.**
Influence of chain transfer to polymer on livingness

AUTHOR(S): Penczek, Stanislaw; Szymanski, Ryszard; Duda, Andrzej; Baran, Jolanta

CORPORATE SOURCE: Centre of Molecular and Macromolecular Studies, Polish Academy of Sciences, Sienkiewicza, 90-363, Pol.

SOURCE: Macromolecular Symposia (2003), 201(Mission and Challenge of Polymer Science and Technology), 261-269
CODEN: MSYMEC; ISSN: 1022-1360

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

AB **Polymerization of cyclic esters** leads to (bio)degradable polymers of the increasing industrial importance. These **polymns.** are of the living nature, although chain transfer to polymer with chain scission may cause deviations from the livingness and introduce structural differences (e.g. in end-groups), important for phys. properties. Two different systems are discussed. In the first one two living macromols. react one with another and reproduce two living micromols., retaining the same reactivities and the same end-groups. **Polymns.** of ϵ -caprolactone and lactide belong to this category. On the other hand, **polymerization** of cyclic carbonates proceeds with chain transfer, in which disproportionation of the living chains takes place: from two living macromols. one "dead" and one "doubly

active" can be formed. Conditions of retaining the livingness in terms of the ratios of the rate consts. of transfer, reinitiation, and propagation are discussed.

IT 33135-50-1P, L,L-Dilactide homopolymer

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(living polymerization of cyclic esters - a route to (bio)degradable polymers. influence of chain transfer to polymer on livingness)

RN 33135-50-1 CAPLUS

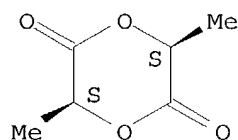
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



CC 35-7 (Chemistry of Synthetic High Polymers)

ST cyclic monomer ring opening **polymn** living chain transfer

IT Chain transfer

Disproportionation

(living polymerization of cyclic esters - a route to (bio)degradable polymers. influence of chain transfer to polymer on livingness)

IT Polycarbonates, preparation

Polyesters, preparation

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(living polymerization of cyclic esters - a route to (bio)degradable polymers. influence of chain transfer to polymer on livingness)

IT **Polymerization**

(living, ring-opening; living polymerization of cyclic esters - a route to (bio)degradable polymers. influence of chain transfer to polymer on livingness)

IT 24980-41-4P, ε-Caprolactone homopolymer 25248-42-4P, Poly[oxy(1-oxo-1,6-hexanediyl)] 31852-84-3P, Trimethylene carbonate homopolymer 33135-50-1P, L,L-Dilactide homopolymer 50862-75-4P, Poly(oxycarbonyloxy-1,3-propanediyl)
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(living polymerization of cyclic esters - a

route to (bio)degradable polymers. influence of chain transfer to polymer on livingness)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 5 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:710849 CAPLUS

DOCUMENT NUMBER: 139:215437

TITLE: Aliphatic polyester and manufacture of the polyester in melt extrusion

INVENTOR(S): Miura, Hiromitsu; Hoshi, Tomohiro; Yamane, Kazuyuki; Sato, Hiroyuki

PATENT ASSIGNEE(S): Kureha Chemical Industry Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| JP 2003252975 | A2 | 20030910 | JP 2002-381165 | 20021227 |

PRIORITY APPLN. INFO.: JP 2001-396972 A 20011227

AB The aliphatic polyester is manufactured by continuous supply of (a) ≥ 1 monomer selected from **cyclic ester** (prepolymer), (b) a **polymerization** catalyst, and (c) a compound having melt viscosity higher than that of the monomer and providing uniform melted composition with the monomer at a **polymerization** temperature in an melt extruder. Thus, a melt extruder was operated under continuous supply of a mixture of 6 kg glycolide, 2 g SnCl₄·5H₂O, and 400 g poly(glycolic acid) to give polyglycolide showing weight degradation ratio 0.6% after 2-h operation and

0.6% after 6-h operation, i.e., retention of quality in continuous melt extrusion.

IT 26202-08-4P, Glycolide homopolymer

RL: **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); PYP (Physical process); **PREP (Preparation)**; PROC (Process)

(manufacture of aliphatic polyester by continuous melt extrusion of **cyclic ester** in presence of additive with high melt viscosity)

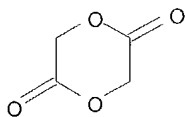
RN 26202-08-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6

CMF C4 H4 O4



- IC ICM C08G063-78
ICS C08G063-08; C08L067-00; C08L101-16
- CC 38-2 (Plastics Fabrication and Uses)
- ST aliph polyester manuf stable melt extrusion; **cyclic ester polymn** aliph polyester; glycolide **polymn** polyglycolic acid additive
- IT Polyesters, processes
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); **PREP (Preparation)**; PROC (Process)
(aliphatic; manufacture of aliphatic polyester by continuous melt extrusion of **cyclic ester** in presence of additive with high melt viscosity)
- IT Extrusion apparatus
Extrusion of plastics and rubbers
Heat-resistant materials
Polymerization catalysts
(manufacture of aliphatic polyester by continuous melt extrusion of **cyclic ester** in presence of additive with high melt viscosity)
- IT 26811-96-1
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(assumed monomers; manufacture of aliphatic polyester by continuous melt extrusion of **cyclic ester** in presence of additive with high melt viscosity)
- IT 26009-03-0P, Poly[oxy(1-oxo-1,2-ethanediyl)] **26202-08-4P**, Glycolide homopolymer
RL: **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); PYP (Physical process); **PREP (Preparation)**; PROC (Process)
(manufacture of aliphatic polyester by continuous melt extrusion of **cyclic ester** in presence of additive with high melt viscosity)
- IT 26124-68-5, Poly(glycolic acid) 26161-42-2, Lacty 9400
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(manufacture of aliphatic polyester by continuous melt extrusion of **cyclic ester** in presence of additive with high melt viscosity)
- IT 7646-78-8, Tin chloride (SnCl₄), uses
RL: CAT (Catalyst use); USES (Uses)
(**polymerization** catalyst; manufacture of aliphatic polyester by continuous melt extrusion of **cyclic ester** in presence of

additive with high melt viscosity)

L32 ANSWER 6 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:490165 CAPLUS

DOCUMENT NUMBER: 139:180394

TITLE: Strontium-based initiator system for ring-opening
polymerization of cyclic esters

AUTHOR(S): Tang, Zhaohui; Chen, Xuesi; Liang, Qizhi; Bian,
Xinchao; Yang, Lixin; Piao, Longhai; Jing, Xiabin

CORPORATE SOURCE: State Key Laboratory of Polymer Physics and Chemistry,
Changchun Institute of Applied Chemistry, Chinese
Academy of Sciences, Changchun, 130022, Peop. Rep.
China

SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry
(2003), 41(13), 1934-1941
CODEN: JPACEC; ISSN: 0887-624X

PUBLISHER: John Wiley & Sons, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB An amino isopropoxyl strontium (Sr-PO) initiator, which was prepared by the reaction of propylene oxide with liquid strontium ammoniate solution, was used to carry out the ring-opening **polymerization** (ROP) of **cyclic esters** to obtain aliphatic polyesters, such as poly(ϵ -caprolactone) (PCL) and poly(L-lactide) (PLLA). The Sr-PO initiator demonstrated an effective initiating activity for the ROP of ϵ -caprolactone (ϵ -CL) and L-lactide (LLA) under mild conditions and adjusted the mol. weight by the ratio of monomer to Sr-PO initiator. Block copolymer PCL-b-PLLA was prepared by sequential **polymerization** of ϵ -CL and LLA, which was demonstrated by ¹H NMR, ¹³C NMR, and gel permeation chromatog. The chemical structure of Sr-PO initiator was confirmed by elemental anal. of Sr and N, ¹H NMR anal. of the end groups in ϵ -CL oligomer, and FTIR spectroscopy. The end groups of PCL were hydroxyl and isopropoxycarbonyl, and FTIR spectroscopy showed a coordination between Sr-PO initiator and the model monomer γ -butyrolactone. These exptl. facts indicated that the ROP of **cyclic esters** followed a coordination-insertion mechanism, and **cyclic esters** exclusively inserted into the Sr-O bond.

IT 33135-50-1P, Poly(L-lactide) 111821-20-6P,
 ϵ -Caprolactone-(L-lactide) block copolymer
RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)
(preparation with strontium-based initiator system)

RN 33135-50-1 CAPLUS

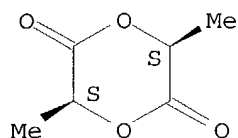
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA
INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



RN 111821-20-6 CAPLUS

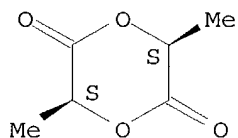
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with 2-oxepanone,
block (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

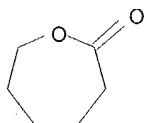
Absolute stereochemistry.



CM 2

CRN 502-44-3

CMF C6 H10 O2



CC 35-3 (Chemistry of Synthetic High Polymers)

ST strontium catalyst ring opening **polymn** lactone

IT Polyesters, preparation

RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(**Preparation**)

(lactone-based; preparation with strontium-based initiator system)

IT Molecular weight

(of polylactones prepared in presence of strontium catalyst)

IT **Polymerization** kinetics

(ring-opening; of lactones in presence of strontium catalyst)

IT **Polymerization** catalysts

- (ring-opening; **polymerization** of lactones in presence of strontium catalyst)
- IT 96-48-0D, γ -Butyrolactone, complexes with isopropoxystrontium amide
578732-12-4D, complexes with γ -butyrolactone
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(in mechanism of ring-opening **polymerization** of lactones in presence of strontium catalyst)
- IT 502-44-3, ϵ -Caprolactone 4511-42-6, L-Lactide
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(kinetics of ring-opening **polymerization** of lactones in presence of strontium catalyst)
- IT 578732-12-4P
RL: CAT (Catalyst use); SPN (Synthetic preparation); **PREP** (Preparation); USES (Uses)
(preparation of strontium-based catalyst for ring-opening **polymerization** of lactones)
- IT 24980-41-4P, Poly(ϵ -caprolactone) 25248-42-4P,
Poly[oxy(1-oxo-1,6-hexanediyl)] 26161-42-2P **33135-50-1P**,
Poly(L-lactide) **111821-20-6P**, ϵ -Caprolactone-(L-lactide)
block copolymer
RL: PRP (Properties); **SPN** (Synthetic preparation); **PREP** (Preparation)
(preparation with strontium-based initiator system)
- IT 75-56-9, Propylene oxide, reactions 7440-24-6, Strontium, reactions
7664-41-7, Ammonia, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(starting material; preparation of strontium-based catalyst for ring-opening **polymerization** of lactones)
- IT 88863-33-6, Strontium isopropoxide
RL: CAT (Catalyst use); USES (Uses)
(strontium-based catalysts for ring-opening **polymerization** of lactones)

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 7 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:340375 CAPLUS

DOCUMENT NUMBER: 139:117703

TITLE: Ring-opening **polymerization** of aliphatic **cyclic esters** by using organic amino calcium catalyst

AUTHOR(S): Piao, Long-Hai; Zhang, Xin-Zhao; Chen, Xue-Si; Deng, Ming-Xiao; Jiang, Lian-Sheng; Jing, Xia-Bin

CORPORATE SOURCE: (State Key Laboratory of Polymer Physics and Chemistry, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun, 130022, Peop. Rep. China

SOURCE: Gaodeng Xuexiao Huaxue Xuebao (2003), 24(2), 346-349
CODEN: KTHPDM; ISSN: 0251-0790

PUBLISHER: Gaodeng Jiaoyu Chubanshe

DOCUMENT TYPE: Journal

LANGUAGE: Chinese

AB .vepsiln.-Caprolactone and L-lactide were ring-opening **polymerized** by using calcium catalysts treated with propylene oxide and acetonitrile/(propylene oxide). The influences of catalyst concentration and aging temperature, **polymerization** time and temperature on mol. weight of the polymers

were studied. This catalyst exhibited high reactivity and some "quasi-living-**polymerization**" character and the mol. weight of the polyester could be controlled by adjusting the mass ratio of monomer to catalyst. Aging treatment of the catalyst and employment of the second organic modifier, acetonitrile, resulted in a higher mol. weight of the polymers. The highest mol. weight obtained was 270 000.

IT 33135-50-1P, L-Lactide, homopolymer

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(ring-opening **polymerization** of aliphatic **cyclic esters** by using organic amino calcium catalyst modified by acrylonitrile/propylene oxide)

RN 33135-50-1 CAPLUS

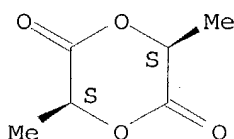
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



CC 35-3 (Chemistry of Synthetic High Polymers)

ST ring opening **polymn** lactide caprolactone org amino catalyst

IT Molecular weight

(ring-opening **polymerization** of aliphatic **cyclic esters** by using organic amino calcium catalyst modified by acrylonitrile/propylene oxide)

IT Polyesters, preparation

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(ring-opening **polymerization** of aliphatic **cyclic esters** by using organic amino calcium catalyst modified by acrylonitrile/propylene oxide)

IT **Polymerization** catalysts

(ring-opening; ring-opening **polymerization** of aliphatic **cyclic esters** by using organic amino calcium catalyst modified by acrylonitrile/propylene oxide)

IT 7440-70-2DP, Calcium, reaction products with ammonia 7664-41-7DP,

Ammonia, reaction products with calcium

RL: CAT (Catalyst use); SPN (Synthetic preparation); **PREP**
(**Preparation**); USES (Uses)

(ring-opening **polymerization** of aliphatic **cyclic esters** by using organic amino calcium catalyst modified by acrylonitrile/propylene oxide)

IT 75-05-8, Acetonitrile, uses 75-56-9, Propylene oxide, uses
RL: MOA (Modifier or additive use); USES (Uses)

(ring-opening **polymerization** of aliphatic **cyclic esters** by using organic amino calcium catalyst modified by acrylonitrile/propylene oxide)

IT 24980-41-4P, .vepsiln.-Caprolactone, homopolymer 25248-42-4P,
.vepsiln.-Caprolactone, homopolymer, sru 26161-42-2P, L-Lactide,
homopolymer, sru 33135-50-1P, L-Lactide, homopolymer
RL: PRP (Properties); SPN (Synthetic preparation); **PREP**

(**Preparation**)

(ring-opening **polymerization** of aliphatic **cyclic esters** by using organic amino calcium catalyst modified by acrylonitrile/propylene oxide)

IT 7440-70-2, Calcium, reactions 7664-41-7, Ammonia, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)

(ring-opening **polymerization** of aliphatic **cyclic esters** by using organic amino calcium catalyst modified by acrylonitrile/propylene oxide)

L32 ANSWER 8 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:266434 CAPLUS

DOCUMENT NUMBER: 139:7318

TITLE: Biodegradable Polymersomes

AUTHOR(S): Meng, Fenghua; Hiemstra, Christine; Engbers, Gerard H.
M.; Feijen, Jan

CORPORATE SOURCE: Institute for Biomedical Technology (BMTI), Polymer
Chemistry and Biomaterials Group, Department of
Chemical Technology, University of Twente, Enschede,
7500, Neth.

SOURCE: Macromolecules (2003), 36(9), 3004-3006
CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB This communication reported the preparation of biodegradable polymersomes from amphiphilic block copolymers based on PEG and polyesters or polycarbonates. All block copolymers were synthesized by ring-opening **polymerization** of **cyclic esters**, e.g., DL-lactide (DLA), ϵ -caprolactone (CL), or carbonates, e.g., trimethylene carbonate (TMC), in the presence of zinc bis[bis(trimethylsilyl)amide] (97 %) and monomethoxypoly(ethylene glycol) (methoxy PEG, 5800 and 1200) at room temperature. Similar to the calcium bis[bis(trimethylsilyl)amide] catalyst system, zinc bis[bis(trimethylsilyl)amide] combined with methoxy PEG initiated the ring-opening **polymerization** of lactides and lactones with high conversion, affording block copolymers with a controlled mol. weight and low polydispersity index. Besides its high activity, its low toxicity

renders the zinc-based catalyst attractive for the synthesis of copolymers for in vivo applications.

IT 168399-10-8P, DL-Lactide-oxirane block copolymer

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(preparation and characterization of block copolymers biodegradable polymersomes)

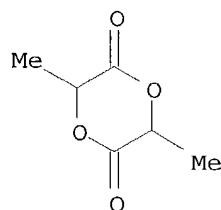
RN 168399-10-8 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



CM 2

CRN 75-21-8

CMF C2 H4 O



CC 35-7 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 36

ST polyoxyethylene polyester block copolymer biodegradable polymersome prepn property

IT Biodegradable materials

(block polyesters; preparation and characterization of block copolymers biodegradable polymersomes)

IT Polyethers, preparation

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(polycarbonate-, block; preparation and characterization of block copolymers biodegradable polymersomes)

IT Polyethers, preparation

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(polyester-, block; preparation and characterization of block copolymers biodegradable polymersomes)

IT Polycarbonates, preparation
Polyesters, preparation
RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(Preparation)
(polyether-, block; preparation and characterization of block copolymers biodegradable polymersomes)

IT Liposomes
Molecular weight
Polydispersity
Polymer morphology
(preparation and characterization of block copolymers biodegradable polymersomes)

IT **Polymerization**
(ring-opening; in preparation and characterization of block copolymers biodegradable polymersomes)

IT 107596-21-4P, ϵ -Caprolactone-oxirane block copolymer
168399-10-8P, DL-Lactide-oxirane block copolymer 211870-02-9P,
Oxirane-trimethylene carbonate block copolymer
RL: PRP (Properties); **SPN (Synthetic preparation)**; **PREP**
(Preparation)
(preparation and characterization of block copolymers biodegradable polymersomes)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 9 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:58143 CAPLUS

DOCUMENT NUMBER: 138:107614

TITLE: Polyhydroxycarboxylic acid and its production process

INVENTOR(S): Yamane, Kazuyuki; Kawakami, Yukichika

PATENT ASSIGNEE(S): Kureha Chemical Industry Co., Ltd., Japan

SOURCE: PCT Int. Appl., 64 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|--|----------|-----------------|----------|
| WO 2003006525 | A1 | 20030123 | WO 2002-JP6835 | 20020705 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, | | | |

PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
NE, SN, TD, TG

EP 1404738 A1 20040407 EP 2002-745856 20020705

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK

PRIORITY APPLN. INFO.: JP 2001-208801 A 20010710
JP 2001-208804 A 20010710
WO 2002-JP6835 W 20020705

AB Polyhydroxycarboxylic acid obtained by ring-opening **polymerization** of
cyclic esters (e.g., glycolide) has a precisely
controlled rate of biodegradability. The polymer has Mw 10,000-1,000,000,
Mw/Mn 1.0-2.5, and yellowness index (YI) ≤ 40 .

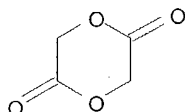
IT 26202-08-4P, Glycolide homopolymer
RL: IMF (Industrial manufacture); PRP (Properties); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(preparation of polyhydroxycarboxylic acids with controlled rate of
biodegradability and low yellowness index)

RN 26202-08-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6
CMF C4 H4 O4



IC ICM C08G063-08

CC 37-3 (Plastics Manufacture and Processing)

ST biodegradability glycolide polymer; biodegradable polyhydroxycarboxylic
acid; ring opening **polymn** glycolide

IT Polyesters, preparation
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(aliphatic; preparation of polyhydroxycarboxylic acids with controlled rate
of
biodegradability and low yellowness index)

IT Biodegradable materials
(preparation of polyhydroxycarboxylic acids with controlled rate of
biodegradability and low yellowness index)

IT 26009-03-0P, Glycolide homopolymer, sru 26202-08-4P, Glycolide
homopolymer
RL: IMF (Industrial manufacture); PRP (Properties); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(preparation of polyhydroxycarboxylic acids with controlled rate of

biodegradability and low yellowness index)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 10 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:831082 CAPLUS

DOCUMENT NUMBER: 138:137696

TITLE: Ring opening polymerisations of **cyclic esters** and carbonate by rare-earth LnCp₃

AUTHOR(S): Agarwal, Seema; Puchner, Mario

CORPORATE SOURCE: Kern-chemie und Makromolekulare Chemie und Wissenschaftliches Zentrum für Materialwissenschaften, Fachbereich Chemie, Philipps-Universität Marburg, Institut für Physikalische Chemie, Marburg, D-35032, Germany

SOURCE: European Polymer Journal (2002), 38(12), 2365-2371
CODEN: EUPJAG; ISSN: 0014-3057

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The ring opening **polymerization of cyclic esters** (ϵ -caprolactone and L-lactide) and cyclic carbonate (1,3-dioxan-2-one (TMC)) initiated with LnCp₃ complexes (Ln=Sm, Er, Pr, Gd and Ce) is reported. The size of the metal atom has an effect on the catalytic activity. The order of reactivity was found to be Er.apprx.Gd>Sm>Pr>Ce. The polyester chains were found to be living for successful synthesis of block copolymers. Polycarbonate (polyTMC) was obtained without CO₂ elimination using LnCp₃ as an initiator.

IT 33135-50-1P, L-Lactide homopolymer

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(ring-opening **polymns. of cyclic ester** and trimethylene carbonate by lanthanide complex catalysts)

RN 33135-50-1 CAPLUS

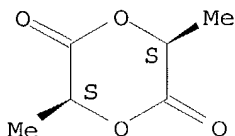
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



IT 111821-20-6P, ϵ -Caprolactone-L-lactide block copolymer

RL: **SPN (Synthetic preparation); PREP (Preparation)**
 (ring-opening **polymns.** of **cyclic ester**
 and trimethylene carbonate by lanthanide complex catalysts)

RN 111821-20-6 CAPLUS

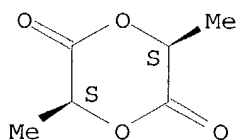
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with 2-oxepanone,
 block (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

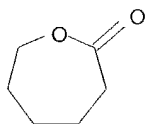
Absolute stereochemistry.



CM 2

CRN 502-44-3

CMF C6 H10 O2



CC 35-7 (Chemistry of Synthetic High Polymers)

ST lanthanide catalyst **polymn cyclic ester**
 carbonate; caprolactone ring opening **polymn** catalyst lanthanide;
 lactide ring opening **polymn** catalyst lanthanide; dioxanone ring
 opening **polymn** catalyst lanthanide; samarium **polymn**
 catalyst **cyclic ester** carbonate; erbium **polymn**
 catalyst **cyclic ester** carbonate; praseodymium
polymn catalyst **cyclic ester** carbonate;
 gadolinium **polymn** catalyst **cyclic ester**
 carbonate; cerium **polymn** catalyst **cyclic ester**
 carbonate

IT Optical activity
 (of polylactide prepared by lanthanide complex catalysts)

IT Polycarbonates, preparation
 Polyesters, preparation

RL: **SPN (Synthetic preparation); PREP (Preparation)**
 (ring-opening **polymns.** of **cyclic ester**
 and trimethylene carbonate by lanthanide complex catalysts)

IT **Polymerization** catalysts
 (ring-opening; ring-opening **polymns. of cyclic ester** and trimethylene carbonate by lanthanide complex catalysts)

IT 1272-21-5, Tricyclopentadienylgadolinium 1298-53-9 1298-55-1, Tricyclopentadienylsamarium 11077-59-1, Tricyclopentadienylpraseodymium 39330-74-0, Tricyclopentadienylerbium
 RL: CAT (Catalyst use); USES (Uses)
 (ring-opening **polymns. of cyclic ester** and trimethylene carbonate by lanthanide complex catalysts)

IT 26161-42-2P, L-Lactide homopolymer, **sru 33135-50-1P**, L-Lactide homopolymer
 RL: PRP (Properties); **SPN (Synthetic preparation); PREP (Preparation)**
 (ring-opening **polymns. of cyclic ester** and trimethylene carbonate by lanthanide complex catalysts)

IT 24980-41-4P, ϵ -Caprolactone homopolymer 25248-42-4P, ϵ -Caprolactone homopolymer, **sru 31852-84-3P**, Trimethylene carbonate homopolymer 50862-75-4P, Trimethylene carbonate homopolymer, **sru 111821-20-6P**, ϵ -Caprolactone-L-lactide block copolymer
 RL: **SPN (Synthetic preparation); PREP (Preparation)**
 (ring-opening **polymns. of cyclic ester** and trimethylene carbonate by lanthanide complex catalysts)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 11 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:814207 CAPLUS

DOCUMENT NUMBER: 137:325796

TITLE: Use of zinc derivatives as **cyclic ester polymerization** catalysts

INVENTOR(S): Dumitrescu, Anca; Martin-Vaca, Blanca; Gornitzka, Heinz; Bourissou, Didier; Cazaux, Jean-Bernard; Bertrand, Guy

PATENT ASSIGNEE(S): Societe De Conseils De Recherches Et D'applications Scientifiques (S.C.R.A.S.), Fr.; Centre National de la Recherche Scientifique CNRS

SOURCE: PCT Int. Appl., 19 pp.
 CODEN: PIXXD2

DOCUMENT TYPE: Patent

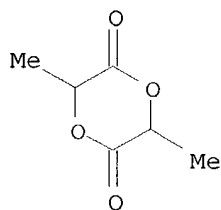
LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

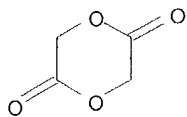
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| ----- | ---- | ----- | ----- | ----- |
| WO 2002083761 | A1 | 20021024 | WO 2002-FR1220 | 20020409 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, | | | | |

PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,
 UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU,
 TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,
 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 EP 1392752 A1 20040303 EP 2002-761923 20020409
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 NO 2003004530 A 20031209 NO 2003-4530 20031009
 PRIORITY APPLN. INFO.: EP 2001-400926 A 20010410
 WO 2002-FR1220 W 20020409
 OTHER SOURCE(S): MARPAT 137:325796
 AB The invention concerns the use of zinc derivs. such as [(Me₃Si)₂N]₂Zn as
 (co)polymerization catalysts of cyclic esters such
 as ε-caprolactone and cyclic esters or lactic
 and glycolic acid in solution or solid phase.
 IT 26680-10-4P, Polylactide 26780-50-7P, Glycolide-lactide
 copolymer 184851-41-0P 473424-25-8P
 473424-27-0P 473424-29-2P
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (use of zinc derivs. as cyclic ester polymn
 catalysts)
 RN 26680-10-4 CAPLUS
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)
 CM 1
 CRN 95-96-5
 CMF C6 H8 O4



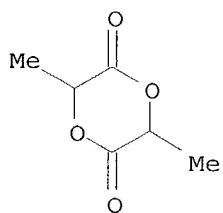
RN 26780-50-7 CAPLUS
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 1,4-dioxane-2,5-dione
 (9CI) (CA INDEX NAME)
 CM 1
 CRN 502-97-6
 CMF C4 H4 O4



CM 2

CRN 95-96-5

CMF C6 H8 O4



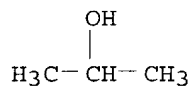
RN 184851-41-0 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer, 1-methylethyl ester
(9CI) (CA INDEX NAME)

CM 1

CRN 67-63-0

CMF C3 H8 O



CM 2

CRN 26680-10-4

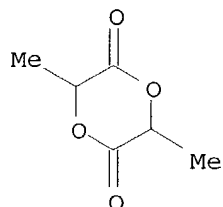
CMF (C6 H8 O4) x

CCI PMS

CM 3

CRN 95-96-5

CMF C6 H8 O4

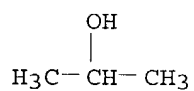


RN 473424-25-8 CAPLUS
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer, 1-methylethyl ester, acetate (9CI) (CA INDEX NAME)

CM 1

CRN 67-63-0

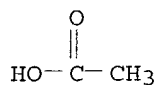
CMF C3 H8 O



CM 2

CRN 64-19-7

CMF C2 H4 O2



CM 3

CRN 26680-10-4

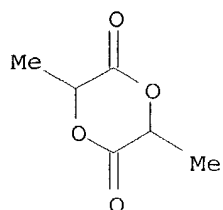
CMF (C6 H8 O4) x

CCI PMS

CM 4

CRN 95-96-5

CMF C6 H8 O4

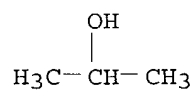


RN 473424-27-0 CAPLUS
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 1,4-dioxane-2,5-dione,
 1-methylethyl ester (9CI) (CA INDEX NAME)

CM 1

CRN 67-63-0

CMF C3 H8 O



CM 2

CRN 26780-50-7

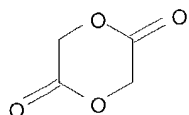
CMF (C6 H8 O4 . C4 H4 O4)x

CCI PMS

CM 3

CRN 502-97-6

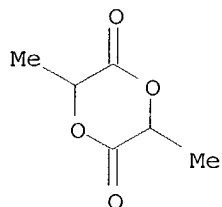
CMF C4 H4 O4



CM 4

CRN 95-96-5

CMF C6 H8 O4



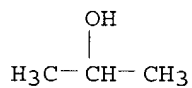
RN 473424-29-2 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 1,4-dioxane-2,5-dione, 1-methylethyl ester, block (9CI) (CA INDEX NAME)

CM 1

CRN 67-63-0

CMF C3 H8 O



CM 2

CRN 107131-72-6

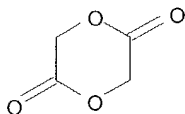
CMF (C6 H8 O4 . C4 H4 O4) x

CCI PMS

CM 3

CRN 502-97-6

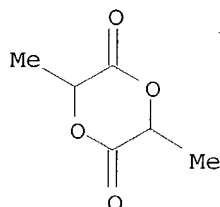
CMF C4 H4 O4



CM 4

CRN 95-96-5

CMF C6 H8 O4



IC ICM C08G063-82
 CC 35-3 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 67
 ST zinc trimethylsilylamide catalyst ring opening **polymn**
cyclic ester; glycolide **polymn** zinc
 trimethylsilylamide catalyst; lactide **polymn** zinc
 trimethylsilylamide catalyst; caprolactone **polymn** zinc
 trimethylsilylamide catalyst
 IT Polyesters, preparation
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (aliphatic; use of zinc derivs. as **cyclic ester**
polymerization catalysts)
 IT **Polymerization** catalysts
 (ring-opening; use of zinc derivs. as **cyclic ester**
polymerization catalysts)
 IT 3999-27-7
 RL: CAT (Catalyst use); USES (Uses)
 (use of zinc derivs. as **cyclic ester polymn**
 . catalysts)
 IT 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] **26680-10-4P**
 , Polylactide **26780-50-7P**, Glycolide-lactide copolymer
 157865-02-6P **184851-41-0P** 473249-86-4P **473424-25-8P**
473424-27-0P 473424-29-2P
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (use of zinc derivs. as **cyclic ester polymn**
 . catalysts)
 REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 12 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:753707 CAPLUS
 DOCUMENT NUMBER: 138:39587
 TITLE: Soluble tin(II) macroinitiator adducts for the
 controlled ring-opening **polymerization** of
 lactones and cyclic carbonates
 AUTHOR(S): Storey, R. F.; Mullen, B. D.; Desai, G. S.; Sherman,
 J. W.; Tang, C. N.
 CORPORATE SOURCE: School of Polymers and High Performance Materials,
 University of Southern Mississippi, Hattiesburg, MS,
 39406, USA
 SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry
 (2002), 40(20), 3434-3442

CODEN: JPACEC; ISSN: 0887-624X

PUBLISHER: John Wiley & Sons, Inc.

DOCUMENT TYPE: Journal

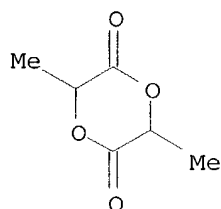
LANGUAGE: English

- AB Polyesters and poly(ester carbonates) were synthesized via ring-opening **polymerization** with tin(II) macroinitiator adducts containing oligomeric L-lactide (LLA), rac-lactide (rac-LA), and ϵ -caprolactone (CL). The initiating species were synthesized by the reaction of LLA, rac-LA, or CL with $\text{Sn}(\text{OEt})_2$ (monomer concentration/initiator concentration ≤ 20) and then were dissolved in methylene chloride or toluene and stored in a stoppered flask for the subsequent ring-opening **polymerization** of **cyclic esters** and carbonates. The soluble tin alkoxide macroinitiators yielded predictable and quant. initiation of **polymerization** for up to 1 mo of storage time at room temperature. The resulting polymers displayed low polydispersity (≤ 1.5), and a high monomer conversion ($>95\%$) was obtained within relatively short **polymerization** times (≤ 2 h). Adjusting the monomer/macroinitiator ratio effectively controlled the mol. weight of the polymers. NMR was used to characterize the initiating species and polymer microstructure, and size exclusion chromatog. was used to determine the mol. weight properties of the polymers.
- IT 26680-10-4DP, Poly(D,L-lactide), adducts with tin diethoxide
 RL: CAT (Catalyst use); **SPN (Synthetic preparation)**; **PREP (Preparation)**; USES (Uses)
 (ROP initiator; preparation soluble tin(II)-cyclic lactone macroinitiator adducts and use in controlled ring-opening **polymerization** of lactones and cyclic carbonates)
- RN 26680-10-4 CAPLUS
- CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



- IT 33135-50-1DP, Poly(L-lactide), adducts with tin diethoxide
 RL: CAT (Catalyst use); **SPN (Synthetic preparation)**; **PREP (Preparation)**; USES (Uses)
 (preparation soluble tin(II)-cyclic lactone macroinitiator adducts and use in controlled ring-opening **polymerization** of lactones and cyclic carbonates)
- RN 33135-50-1 CAPLUS

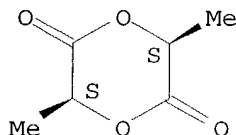
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



IT 26680-10-4P, Poly(D,L-lactide)

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation soluble tin(II)-cyclic lactone macroinitiator adducts and use in controlled ring-opening polymerization of lactones and cyclic carbonates)

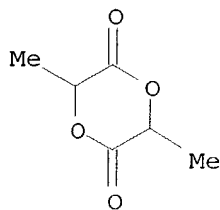
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



CC 35-3 (Chemistry of Synthetic High Polymers)

ST tin ethoxide lactide adduct macroinitiator ring opening polymn; cyclic ester ring opening polymn

macroinitiator polyester prepn; carbonate ring opening polymn

macroinitiator polyester polycarbonate

IT Polyesters, preparation

RL: SPN (Synthetic preparation); PREP (Preparation)

(polycarbonate-; preparation soluble tin(II)-cyclic lactone macroinitiator adducts and use in controlled ring-opening polymerization of lactones and cyclic carbonates)

IT Polycarbonates, preparation

RL: SPN (Synthetic preparation); **PREP (Preparation)**
 (polyester-; preparation soluble tin(II)-cyclic lactone macroinitiator
 adducts
 and use in controlled ring-opening **polymerization** of lactones and
 cyclic carbonates)

IT NMR (nuclear magnetic resonance)
 Polydispersity
 (preparation soluble tin(II)-cyclic lactone macroinitiator adducts and use
 in
 controlled ring-opening **polymerization** of lactones and cyclic
 carbonates)

IT Polyesters, preparation
 RL: SPN (Synthetic preparation); **PREP (Preparation)**
 (preparation soluble tin(II)-cyclic lactone macroinitiator adducts and use
 in
 controlled ring-opening **polymerization** of lactones and cyclic
 carbonates)

IT **Polymerization** catalysts
 (ring-opening, macroinitiators; preparation soluble tin(II)-cyclic lactone
 macroinitiator adducts and use in controlled ring-opening
polymerization of lactones and cyclic carbonates)

IT **Polymerization**
 (ring-opening; preparation soluble tin(II)-cyclic lactone macroinitiator
 adducts and use in controlled ring-opening **polymerization** of
 lactones and cyclic carbonates)

IT 14791-99-2DP, Tin diethoxide, adducts with oligomeric lactides
 24980-41-4DP, Poly(ϵ -caprolactone), adducts with tin diethoxide
 25248-42-4DP, Poly[oxy(1-oxo-1,6-hexanediyl)], adducts with tin diethoxide
 26023-30-3DP, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)], adducts with tin
 diethoxide 26161-42-2DP, adducts with tin diethoxide
 26680-10-4DP, Poly(D,L-lactide), adducts with tin diethoxide
 RL: CAT (Catalyst use); **SPN (Synthetic preparation)**; **PREP**
(Preparation); **USES (Uses)**
 (ROP initiator; preparation soluble tin(II)-cyclic lactone macroinitiator
 adducts and use in controlled ring-opening **polymerization** of
 lactones and cyclic carbonates)

IT **33135-50-1DP**, Poly(L-lactide), adducts with tin diethoxide
 RL: CAT (Catalyst use); **SPN (Synthetic preparation)**; **PREP**
(Preparation); **USES (Uses)**
 (preparation soluble tin(II)-cyclic lactone macroinitiator adducts and use
 in
 controlled ring-opening **polymerization** of lactones and cyclic
 carbonates)

IT 24980-41-4P, Poly(ϵ -caprolactone) 25248-42-4P,
 Poly[oxy(1-oxo-1,6-hexanediyl)] 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-
 ethanediyl)] **26680-10-4P**, Poly(D,L-lactide) 31852-84-3P,
 Trimethylene carbonate polymer 50862-75-4P, Trimethylene carbonate
 polymer, SRU
 RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
 (preparation soluble tin(II)-cyclic lactone macroinitiator adducts and use
 in
 controlled ring-opening **polymerization** of lactones and cyclic

carbonates)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 13 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:676078 CAPLUS
 DOCUMENT NUMBER: 137:201738
 TITLE: Method for preparing polyesters having intrachain free acid functions
 INVENTOR(S): Cazaux, Jean-Bernard; Brigati, Charles; Louchkoff, Alexandre
 PATENT ASSIGNEE(S): Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.), Fr.
 SOURCE: PCT Int. Appl., 13 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: French
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|----------|-----------------|------------|
| WO 2002068499 | A1 | 20020906 | WO 2002-FR655 | 20020222 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| FR 2821360 | A1 | 20020830 | FR 2001-2630 | 20010227 |
| FR 2821360 | B1 | 20030530 | | |
| EP 1366105 | A1 | 20031203 | EP 2002-704876 | 20020222 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| NO 2003003783 | A | 20030826 | NO 2003-3783 | 20030826 |
| PRIORITY APPLN. INFO.: | | | | |
| | | | FR 2001-2630 | A 20010227 |
| | | | WO 2002-FR655 | W 20020222 |
| AB Polyesters with mid-chain free acid groups are manufactured by polymn . of cyclic esters such as lactides and glycolides in the presence of tartaric acid diesters of (substituted) benzyl alc. and removal of the (substituted) benzyl groups. | | | | |
| IT 452971-33-4DP , Dibenzyl tartrate-glycolide-L-lactide copolymer, hydrolyzed | | | | |
| RL: IMF (Industrial manufacture); PREP (Preparation) (preparing polyesters having intrachain free acid functions) | | | | |
| RN | 452971-33-4 CAPLUS | | | |
| CN | Butanedioic acid, 2,3-dihydroxy- (2R,3R)-, bis(phenylmethyl) ester, polymer with (3S,6S)-3,6-dimethyl-1,4-dioxane-2,5-dione and | | | |

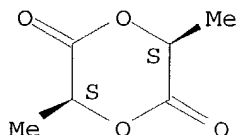
1,4-dioxane-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.

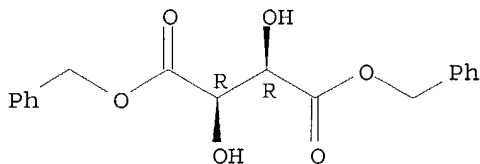


CM 2

CRN 622-00-4

CMF C18 H18 O6

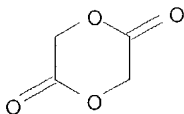
Absolute stereochemistry. Rotation (+).



CM 3

CRN 502-97-6

CMF C4 H4 O4



IT 452971-33-4P, Dibenzyl tartrate-glycolide-L-lactide copolymer

RL: IMF (Industrial manufacture); RCT (Reactant); PREP

(Preparation); RACT (Reactant or reagent)

(preparing polyesters having intrachain free acid functions)

RN 452971-33-4 CAPLUS

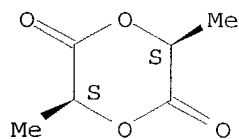
CN Butanedioic acid, 2,3-dihydroxy- (2R,3R)-, bis(phenylmethyl) ester, polymer with (3S,6S)-3,6-dimethyl-1,4-dioxane-2,5-dione and 1,4-dioxane-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.

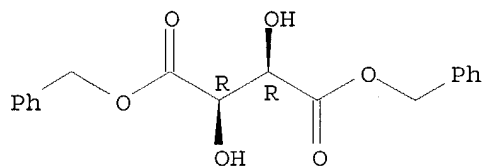


CM 2

CRN 622-00-4

CMF C18 H18 O6

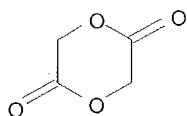
Absolute stereochemistry. Rotation (+).



CM 3

CRN 502-97-6

CMF C4 H4 O4



IC ICM C08G063-82

ICS C08G063-08

CC 35-5 (Chemistry of Synthetic High Polymers)

ST lactide glycolide polyester midchain acid group manuf; dibenzyl tartrate
lactide glycolide polyester manuf

IT Polyesters, preparation

RL: IMF (Industrial manufacture); **PREP (Preparation)**

(aliphatic; preparing polyesters having intrachain free acid functions)

IT **452971-33-4DP**, Dibenzyl tartrate-glycolide-L-lactide copolymer,

hydrolyzed

RL: IMF (Industrial manufacture); PREP (Preparation)

(preparing polyesters having intrachain free acid functions)

IT 452971-33-4P, Dibenzyl tartrate-glycolide-L-lactide copolymer

RL: IMF (Industrial manufacture); RCT (Reactant); PREP

(Preparation); RACT (Reactant or reagent)

(preparing polyesters having intrachain free acid functions)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 14 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:640603 CAPLUS

DOCUMENT NUMBER: 137:370432

TITLE: Kinetics and mechanism of **cyclic esters polymerization** initiated with covalent metal carboxylates, 5a end-group studies in the model ϵ -caprolactone and L,L-dilactide/tin(II) and zinc octoate/butyl alcohol systems

AUTHOR(S): Libiszowski, Jan; Kowalski, Adam; Duda, Andrzej; Penczek, Stanislaw

CORPORATE SOURCE: Department of Polymer Chemistry, Center of Molecular and Macromolecular Studies, Polish Academy of Sciences, Lodz, PL-90-363, Pol.

SOURCE: Macromolecular Chemistry and Physics (2002), 203(10/11), 1694-1701

CODEN: MCHPES; ISSN: 1022-1352

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Ring-opening **polymns.** of ϵ -caprolactone (CL) and L,L-dilactide (LA) initiated by tin(II) octoate ($\text{Sn}(\text{Oct})_2$) and zinc octoate ($\text{Zn}(\text{Oct})_2$) and co-initiated with Bu alc. (BuOH) carried out in THF as a solvent at 80° were studied. By means of MALDI-TOF mass spectrometry, the formation of several populations of polyester macromols. bearing various end-groups was revealed, namely for poly(ϵ -caprolactone) (PCL): $\text{BuO}(\text{O})\text{C-PCL-OH}$ (A), $\text{BuO}(\text{O})\text{C-PCL-Oct}$ (B), $\text{HO}(\text{O})\text{C-PCL-OH}$ (C), $\text{HO}(\text{O})\text{C-PCL-Oct}$ (D), and PCL cyclics (E), and for poly(L-lactide) (PLA): $\text{BuO}(\text{O})\text{C-PLA-OH}$ (A'), $\text{BuO}(\text{O})\text{C-PLA-Oct}$ (B'), $\text{HO}(\text{O})\text{C-PLA-OH}$ (C'), and $\text{HO}(\text{O})\text{C-PLA-Oct}$ (D') (where $\text{Bu}=\text{C}_4\text{H}_9$ and $\text{Oct}=\text{O}(\text{O})\text{CCH}(\text{C}_2\text{H}_5)\text{C}_4\text{H}_9$). In these **polymns.** the end-groups in the originally formed macromols. change slowly with time. In the LA/ $\text{Sn}(\text{Oct})_2/\text{BuOH}$ system at the beginning of **polymerization** almost exclusively macromols. of the structure A' are formed and then structures B', C', and D' start to appear, however, after a period more than 300 times (at 80°C) longer than that required for full monomer conversion, these macromols. give exclusively esterified B' and D' chains. With $\text{Zn}(\text{Oct})_2/\text{BuOH}$ all of these processes are much slower and less selective.

IT 33135-50-1P, L-Lactide polymer 475097-33-7P

475097-34-8P 475097-35-9P

RL: PRP (Properties); SPN (Synthetic preparation); PREP

(Preparation)

(end-group studies in caprolactone and dilactide/tin(II) and zinc octoate/butyl alc. systems)

RN 33135-50-1 CAPLUS

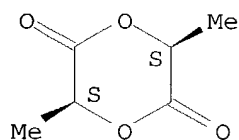
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



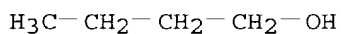
RN 475097-33-7 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer, butyl ester (9CI) (CA INDEX NAME)

CM 1

CRN 71-36-3

CMF C4 H10 O



CM 2

CRN 33135-50-1

CMF (C6 H8 O4)x

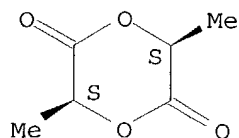
CCI PMS

CM 3

CRN 4511-42-6

CMF C6 H8 O4

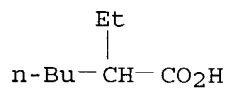
Absolute stereochemistry.



RN 475097-34-8 CAPLUS
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer,
2-ethylhexanoate (9CI) (CA INDEX NAME)

CM 1

CRN 149-57-5
CMF C8 H16 O2



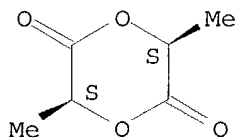
CM 2

CRN 33135-50-1
CMF (C6 H8 O4) x
CCI PMS

CM 3

CRN 4511-42-6
CMF C6 H8 O4

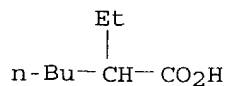
Absolute stereochemistry.



RN 475097-35-9 CAPLUS
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer, butyl ester,
2-ethylhexanoate (9CI) (CA INDEX NAME)

CM 1

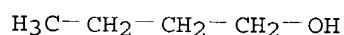
CRN 149-57-5
CMF C8 H16 O2



CM 2

CRN 71-36-3

CMF C4 H10 O



CM 3

CRN 33135-50-1

CMF (C6 H8 O4)x

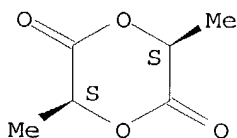
CCI PMS

CM 4

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



CC 35-7 (Chemistry of Synthetic High Polymers)

ST caprolactone dilactide tin zinc octoate butanol catalyst

IT **Polymerization** catalysts

(end-group studies in caprolactone and dilactide/tin(II) and zinc octoate/butyl alc. systems)

IT Polyesters, preparation

RL: PRP (Properties); SPN (Synthetic preparation); **PREP**

(**Preparation**)

(end-group studies in caprolactone and dilactide/tin(II) and zinc octoate/butyl alc. systems)

IT 136-53-8, Zinc octoate 301-10-0, Tin octoate

RL: CAT (Catalyst use); USES (Uses)

(end-group studies in caprolactone and dilactide/tin(II) and zinc octoate/butyl alc. systems)

IT 24980-41-4P, Poly(ϵ -caprolactone) 25248-42-4P,
Poly(ϵ -caprolactone) sru 26161-42-2P **33135-50-1P**,
L-Lactide polymer 60303-48-2P 60327-94-8P, ϵ -Caprolactone
homopolymer butyl ester 475096-60-7P 475096-61-8P 475096-62-9P
475096-63-0P 475096-64-1P 475097-31-5P 475097-32-6P
475097-33-7P 475097-34-8P 475097-35-9P

RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)

(end-group studies in caprolactone and dilactide/tin(II) and zinc
octoate/butyl alc. systems)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 15 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:635727 CAPLUS

DOCUMENT NUMBER: 137:311329

TITLE: **Polymerizations of Cyclic**

Esters Catalyzed by Titanium Complexes Having
Chalcogen-Bridged Chelating Diaryloxo Ligands

AUTHOR(S): Takashima, Yoshinori; Nakayama, Yuushou; Watanabe,
Kouji; Itono, Tetsuya; Ueyama, Norikazu; Nakamura,
Akira; Yasuda, Hajime; Harada, Akira; Okuda, Jun

CORPORATE SOURCE: Department of Macromolecular Science Graduate School
of Science, Osaka University, Osaka, 560-0043, Japan

SOURCE: Macromolecules (2002), 35(20), 7538-7544

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A series of titanium complexes having tellurium-bridged chelating
bis(aryloxo)ligands, $[\text{TiX}_2\{2,2'\text{-Te(4-Me-6-tBu-C}_6\text{H}_2\text{O)}_2\}]_2$ (5: X = Cl; 6: X
= OiPr), catalyzed the ring-opening **polymerization of cyclic**
esters such as ϵ -caprolactone, δ -valerolactone, and
L-lactide. The strong dependence of **polymns.** on the solvent was
observed in this catalytic system. When the **polymns.** of
 ϵ -caprolactone and L-lactide were carried out in toluene at
100°, tellurium-bridged bis(aryloxo)titanium complex 5 was found to
give polymers with rather broad mol. weight distribution due to back-biting.
When the **polymns.** of ϵ -caprolactone and L-lactide was
carried out in anisole or in dioxane at 100°, complex 5 was found
to initiate the controlled **polymerization**, to result in quant. polymer
yields and narrow mol. weight distributions (living nature). The diblock
copolymers of L-lactide and ϵ -caprolactone were also obtained with
the catalyst system 5 in anisole. The diblock copolymers showed two
melting endothermic at 44.7°-53.5° derived from the
poly(ϵ -caprolactone) block and at 155.2°-156.8°
derived from the poly(L-lactide) block.

IT **33135-50-1P**, L-Lactide homopolymer **111821-20-6P**,
 ϵ -Caprolactone-L-lactide block copolymer

RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)

(**polymns.** of cyclic esters catalyzed by

titanium complexes having chalcogen-bridged chelating diaryloxo
ligands)

RN 33135-50-1 CAPLUS

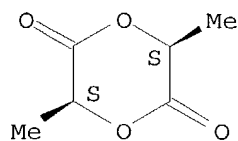
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA
INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



RN 111821-20-6 CAPLUS

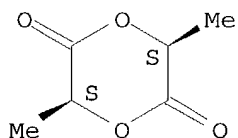
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with 2-oxepanone,
block (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

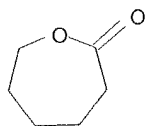
Absolute stereochemistry.



CM 2

CRN 502-44-3

CMF C6 H10 O2



CC 35-7 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67, 78

- ST caprolactone ring opening **polymn** chalcogen bridged titanium complex catalyst; valerolactone ring opening **polymn** chalcogen bridged titanium complex catalyst; lactide ring opening **polymn** chalcogen bridged titanium complex catalyst
- IT Polymers, preparation
 RL: PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**
 (biodegradable; **polymns. of cyclic esters** catalyzed by titanium complexes having chalcogen-bridged chelating diaryloxo ligands)
- IT Solvent effect
 (on **polymns. of cyclic esters** catalyzed by titanium complexes having chalcogen-bridged chelating diaryloxo ligands)
- IT Molecular weight
 Molecular weight distribution
 (**polymns. of cyclic esters** catalyzed by titanium complexes having chalcogen-bridged chelating diaryloxo ligands)
- IT Polyesters, preparation
 RL: PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**
 (**polymns. of cyclic esters** catalyzed by titanium complexes having chalcogen-bridged chelating diaryloxo ligands)
- IT **Polymerization**
 Polymerization catalysts
 (ring-opening; **polymns. of cyclic esters** catalyzed by titanium complexes having chalcogen-bridged chelating diaryloxo ligands)
- IT 57-57-8, β -Propiolactone
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (attempt **polymerization** catalyzed by titanium complexes having chalcogen-bridged chelating diaryloxo ligands)
- IT 470693-05-1P
 RL: SPN (Synthetic preparation); **PREP (Preparation)**
 (model compound; **polymns. of cyclic esters** catalyzed by titanium complexes having chalcogen-bridged chelating diaryloxo ligands)
- IT 5593-70-4 104181-55-7 281199-61-9 281199-62-0 281199-64-2
 281199-66-4 281199-67-5
 RL: CAT (Catalyst use); USES (Uses)
 (**polymerization** catalyst; **polymns. of cyclic esters** catalyzed by titanium complexes having chalcogen-bridged chelating diaryloxo ligands)
- IT 24980-41-4P, ϵ -Caprolactone homopolymer 25248-42-4P, ϵ -Caprolactone homopolymer, sru 26161-42-2P, L-Lactide homopolymer, sru 26354-94-9P, δ -Valerolactone homopolymer 26499-05-8P, δ -Valerolactone homopolymer, sru 33135-50-1P, L-Lactide homopolymer 111821-20-6P, ϵ -Caprolactone-L-lactide block copolymer

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(polymns. of cyclic esters catalyzed by titanium complexes having chalcogen-bridged chelating diaryloxo ligands)

IT 502-44-3, ϵ -Caprolactone

RL: RCT (Reactant); RACT (Reactant or reagent)

(polymns. of cyclic esters catalyzed by titanium complexes having chalcogen-bridged chelating diaryloxo ligands)

IT 100-66-3, Anisole, uses 108-88-3, Toluene, uses 123-91-1, Dioxane, uses

RL: NUU (Other use, unclassified); USES (Uses)

(solvent effect on polymns. of cyclic esters catalyzed by titanium complexes having chalcogen-bridged chelating diaryloxo ligands)

REFERENCE COUNT: 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 16 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:635171 CAPLUS

DOCUMENT NUMBER: 138:39553

TITLE: Synthesis of aliphatic polyesters of various architectures by the controlled ring-opening polymerization of cyclic esters

AUTHOR(S): Duda, Andrzej

CORPORATE SOURCE: Department of Polymer Chemistry, Center of Molecular and Macromolecular Studies, Polish Academy of Sciences, Lodz, 90-363, Pol.

SOURCE: Polimery (Warsaw, Poland) (2002), 47(7/8), 469-478
CODEN: POLIA4; ISSN: 0032-2725

PUBLISHER: Instytut Chemii Przemyslowej

DOCUMENT TYPE: Journal; General Review

LANGUAGE: English

AB A review covering, 80 refs. presents recent studies on the controlled synthesis of poly(aliphatic ester)s (PAE's), mostly including poly(.vepsiln.-caprolactone) and poly(L-lactide). In the introduction, general features and practical applications of PAE's, the latter resulting mostly from ability of these polymers to (bio)degradation, are briefly discussed; polymerization methods leading to PAE's are also presented. Then, the ring-opening polymerization of .vepsiln.-caprolactone (CL) and L,L-dilactide (LA), including thermodyn. and kinetic polymerizability of CL and LA is described. Finally, recently elaborated methods of synthesis, of poly(.vepsiln.-caprolactone)s and poly(L-dilactide)s of various architectures, such as linear homopolymers, and star-shaped polymers are presented in a more detail.

IT 33135-50-1P, L-Lactide homopolymer

RL: SPN (Synthetic preparation); PREP (Preparation)

(synthesis of aliphatic polyesters of various architectures by the controlled ring-opening polymerization of cyclic esters)

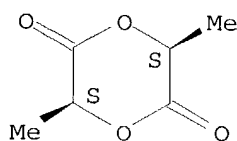
RN 33135-50-1 CAPLUS
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA
INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



CC 35-0 (Chemistry of Synthetic High Polymers)
ST review **cyclic ester** ring opening **polymn**
aliph polyester prepn; polycaprolactone prepn review; polylactide prepn
review
IT Polyesters, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(aliphatic; synthesis of aliphatic polyesters of various architectures by
the controlled ring-opening **polymerization** of **cyclic esters**)
IT **Polymerization**
(ring-opening; synthesis of aliphatic polyesters of various architectures
by the controlled ring-opening **polymerization** of **cyclic esters**)
IT 24980-41-4P, ϵ -Caprolactone homopolymer 25248-42-4P,
Poly[oxy(1-oxo-1,6-hexanediyl)] 26161-42-2P **33135-50-1P**,
L-Lactide homopolymer
RL: **SPN (Synthetic preparation); PREP (Preparation)**
(synthesis of aliphatic polyesters of various architectures by the
controlled ring-opening **polymerization** of **cyclic esters**)

REFERENCE COUNT: 82 THERE ARE 82 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 17 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:589682 CAPLUS

DOCUMENT NUMBER: 137:311208

TITLE: Control of Mn, Mw/Mn, end-groups, and kinetics in
living **polymerization** of **cyclic esters**

AUTHOR(S): Biela, Tadeusz; Duda, Andrzej; Penczek, Stanislaw

CORPORATE SOURCE: Center of Molecular and Macromolecular Studies, Polish
Academy of Science, Lodz, 90-363, Pol.

SOURCE: Macromolecular Symposia (2002), 183(IUPAC

International Symposium on Ionic Polymerization,
2001), 1-10

CODEN: MSYMEC; ISSN: 1022-1360

PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

AB A review. Factors affecting molar mass, molar mass distribution, end-groups, and kinetics control in **polymerization** of ε-caprolactone (CL) and L,L-dilactide (LA) initiated by covalent alkylmetal alkoxides, metal alkoxides, and metal carboxylates are discussed. First, an importance of the reliable molar mass measurements of the resulting polyesters is stressed. Then, it is shown that R₂AlOR', Al(OR)₃, Sn(OR)₂, and Sn[(O)OCR']₂/ROH initiators provide living **polymerization of cyclic esters**, in spite of the extensive aggregation phenomena. In LA **polymerization** Sn(II)-alkoxides appeared to be particularly effective, allowing Mn control in the range from 102 up to 106. Conditions enabling side chain transfer reactions to be eliminated are also discussed.

IT 33135-50-1P, L-Lactide homopolymer

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(control of Mn, Mw/Mn, end-groups, and kinetics in living **polymerization of cyclic esters** by metal alkoxides and metal carboxylates)

RN 33135-50-1 CAPLUS

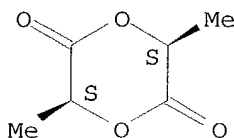
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



CC 35-0 (Chemistry of Synthetic High Polymers)

ST review living **polymn** caprolactone lactide

IT Polyesters, preparation

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(control of Mn, Mw/Mn, end-groups, and kinetics in living **polymerization of cyclic esters** by metal alkoxides and metal carboxylates)

IT **Polymerization catalysts**

Polymerization kinetics

(living; control of Mn, Mw/Mn, end-groups, and kinetics in living
polymerization of cyclic esters by metal alkoxides
 and metal carboxylates)

IT 502-44-3, ϵ -Caprolactone 4511-42-6, L,L-Lactide
 RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
 (control of Mn, Mw/Mn, end-groups, and kinetics in living
polymerization of cyclic esters by metal alkoxides
 and metal carboxylates)

IT 24980-41-4P, ϵ -Caprolactone homopolymer 25248-42-4P,
 ϵ -Caprolactone homopolymer, sru 26161-42-2P, L-Lactide
 homopolymer, sru 33135-50-1P, L-Lactide homopolymer
 RL: PRP (Properties); SPN (Synthetic preparation); PREP
 (Preparation)
 (control of Mn, Mw/Mn, end-groups, and kinetics in living
polymerization of cyclic esters by metal alkoxides
 and metal carboxylates)

REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 18 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:490573 CAPLUS

DOCUMENT NUMBER: 137:21008

TITLE: Method for preparation of biodegradable aliphatic
 polyesters by using calcium organic compounds as ring
 opening **polymerization** catalysts

INVENTOR(S): Jing, Xiabin; Chen, Xuesi; Zhang, Xinzhaio; Jiang,
 Liansheng; Liang, Qizhi; Piao, Longhai

PATENT ASSIGNEE(S): Changchun Inst. of Applied Chemistry, Chinese Academy
 of Sciences, Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 8 pp.
 CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|----------|-----------------|----------|
| ----- | ---- | ----- | ----- | ----- |
| CN 1306019 | A | 20010801 | CN 2000-126534 | 20000913 |
| CN 1114642 | B | 20030716 | | |

PRIORITY APPLN. INFO.: CN 2000-126534 20000913

AB The polyesters (homopolymer, random copolymer or graft copolymer) are
 prepared by open-ring **polymerization of cyclic esters**
 (e.g., ϵ -caprolactone) or **cyclic esters** and
cyclic ether (ethylene oxide or propylene oxide) in the presence
 of calcium organic compds. in a ratio of monomer to Ca catalyst 50-1500 at
 20-250° for 0.5-24 h.

IT 33135-50-1P, Poly(L-lactide) 65408-67-5P,
 ϵ -Caprolactone-L-lactide copolymer 111821-20-6P,
 ϵ -Caprolactone-L-lactide block copolymer 149479-29-8P,
 Ethylene oxide-L-lactide block copolymer 171370-11-9P
 389131-02-6P

RL: BUU (Biological use, unclassified); **IMF (Industrial manufacture)**; PRP (Properties); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)

(method for preparation of biodegradable aliphatic polyesters by using calcium

organic compds. as ring opening **polymerization** catalysts)

RN 33135-50-1 CAPLUS

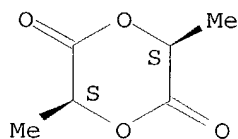
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



RN 65408-67-5 CAPLUS

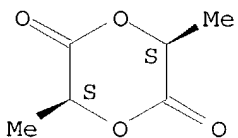
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with 2-oxepanone (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

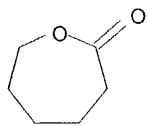
Absolute stereochemistry.



CM 2

CRN 502-44-3

CMF C6 H10 O2

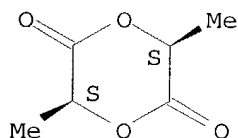


RN 111821-20-6 CAPLUS
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with 2-oxepanone,
block (9CI) (CA INDEX NAME)

CM 1

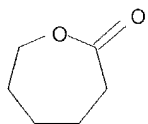
CRN 4511-42-6
CMF C6 H8 O4

Absolute stereochemistry.



CM 2

CRN 502-44-3
CMF C6 H10 O2

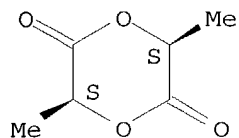


RN 149479-29-8 CAPLUS
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with oxirane,
block (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6
CMF C6 H8 O4

Absolute stereochemistry.



CM 2

CRN 75-21-8

CMF C2 H4 O



RN 171370-11-9 CAPLUS

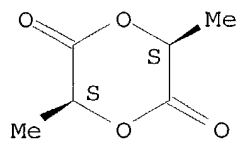
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with methyloxirane and oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

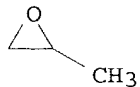
Absolute stereochemistry.



CM 2

CRN 75-56-9

CMF C3 H6 O



CM 3

CRN 75-21-8
CMF C2 H4 O

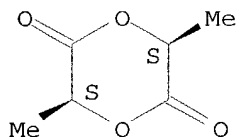


RN 389131-02-6 CAPLUS
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with
methyloxirane, block (9CI) (CA INDEX NAME)

CM 1

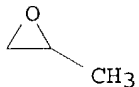
CRN 4511-42-6
CMF C6 H8 O4

Absolute stereochemistry.



CM 2

CRN 75-56-9
CMF C3 H6 O



IC ICM C08G063-42
ICS C08G063-83
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 63
ST polyester aliph prepn ring opening **polymn**; caprolactone polymer
prepn calcium catalyst
IT Polyesters, preparation
RL: BUU (Biological use, unclassified); IMF (Industrial manufacture); PRP
(Properties); BIOL (Biological study); **PREP (Preparation)**; USES
(Uses)
(aliphatic; method for preparation of biodegradable aliphatic polyesters by
using
calcium organic compds. as ring opening **polymerization** catalysts)
IT Polymers, preparation

RL: BUU (Biological use, unclassified); IMF (Industrial manufacture); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)
 (biodegradable, 2; method for preparation of biodegradable aliphatic polyesters
 by using calcium organic compds. as ring opening **polymerization** catalysts)

IT Polyoxyalkylenes, preparation
 RL: BUU (Biological use, unclassified); IMF (Industrial manufacture); PRP (Properties); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)
 (polyester-, block; method for preparation of biodegradable aliphatic polyesters by using calcium organic compds. as ring opening **polymn** . catalysts)

IT Polyoxyalkylenes, preparation
 RL: BUU (Biological use, unclassified); IMF (Industrial manufacture); PRP (Properties); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)
 (polyester-; method for preparation of biodegradable aliphatic polyesters by using calcium organic compds. as ring opening **polymerization** catalysts)

IT Polyesters, preparation
 RL: BUU (Biological use, unclassified); IMF (Industrial manufacture); PRP (Properties); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)
 (polyoxyalkylene-, block; method for preparation of biodegradable aliphatic polyesters by using calcium organic compds. as ring opening **polymn** . catalysts)

IT Polyesters, preparation
 RL: BUU (Biological use, unclassified); IMF (Industrial manufacture); PRP (Properties); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)
 (polyoxyalkylene-; method for preparation of biodegradable aliphatic polyesters
 by using calcium organic compds. as ring opening **polymerization** catalysts)

IT **Polymerization**
Polymerization catalysts
 (ring-opening; method for preparation of biodegradable aliphatic polyesters
 by using calcium organic compds. as ring opening **polymerization** catalysts)

IT 24980-41-4P, Poly(ϵ -caprolactone) 25248-42-4P, Poly[oxy(1-oxo-1,6-hexanediyl)] 25639-73-0P, ϵ -Caprolactone-propylene oxide copolymer 26161-42-2P 30174-06-2P, ϵ -Caprolactone-ethylene oxide copolymer 33135-50-1P, Poly(L-lactide) 65408-67-5P, ϵ -Caprolactone-L-lactide copolymer 107596-21-4P, ϵ -Caprolactone-ethylene oxide block copolymer 111821-20-6P, ϵ -Caprolactone-L-lactide block copolymer 114789-27-4P, ϵ -Caprolactone-propylene oxide block copolymer 149479-29-8P, Ethylene oxide-L-lactide block copolymer 171370-11-9P 389131-02-6P
 RL: BUU (Biological use, unclassified); IMF (Industrial manufacture); PRP (Properties); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)

(method for preparation of biodegradable aliphatic polyesters by using calcium

organic compds. as ring opening **polymerization** catalysts)

IT 7440-70-2D, Calcium, compds.

RL: CAT (Catalyst use); USES (Uses)

(method for preparation of biodegradable aliphatic polyesters by using calcium

organic compds. as ring opening **polymerization** catalysts)

L32 ANSWER 19 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:230640 CAPLUS

DOCUMENT NUMBER: 137:6527

TITLE: Ring opening **polymerization** of lactides
using nucleophilic organic catalysts

AUTHOR(S): Connor, Eric F.; Nyce, Gregory; Moeck, Andreas; Myers, Matthew; Nederberg, Fredrick; Hedrick, James L.

CORPORATE SOURCE: IBM Almaden Research, San Jose, CA, 95120, USA

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(1), 647

CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

AB The living ring-opening **polymerization** of **cyclic esters** is described using nucleophilic organic catalysts, including tertiary amines, phosphines and N-heterocyclic carbenes. In particular N-heterocyclic carbenes, a relatively unexplored organic catalyst, was found to be very reactive for **polymerization** with respect to other catalysts surveyed.

IT 26680-10-4P, Polylactide

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); SPN (**Synthetic preparation**); PREP (**Preparation**); PROC (Process)

(ring opening **polymerization** of lactides using nucleophilic organic catalysts)

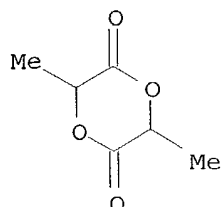
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



- CC 35-7 (Chemistry of Synthetic High Polymers)
- ST ring opening **polymer** lactide nucleophilic org catalyst
heterocyclic carbene; polyester synthesis **cyclic ester**
ring opening heterocyclic carbene catalyst
- IT Carbenes (methylene derivatives)
RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(alkylidene, heterocyclic; ring opening **polymerization** of lactides using nucleophilic organic catalysts)
- IT Polyesters, preparation
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); **PREP (Preparation)**; PROC (Process)
(ring opening **polymerization** of lactides using nucleophilic organic catalysts)
- IT **Polymerization** catalysts
(ring-opening; ring opening **polymerization** of lactides using nucleophilic organic catalysts)
- IT 141556-42-5
RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(ring opening **polymerization** of lactides using nucleophilic organic catalysts)
- IT 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] **26680-10-4P**, Polylactide
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); **SPN (Synthetic preparation)**; **PREP (Preparation)**; PROC (Process)
(ring opening **polymerization** of lactides using nucleophilic organic catalysts)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 20 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:221299 CAPLUS
DOCUMENT NUMBER: 136:386448
TITLE: Mechanistic Comparison of **Cyclic Ester Polymerizations** by Novel Iron(III)-Alkoxide Complexes: Single vs Multiple Site Catalysis
AUTHOR(S): O'Keefe, Brendan J.; Breyfogle, Laurie E.; Hillmyer, Marc A.; Tolman, William B.

CORPORATE SOURCE: Department of Chemistry, University of Minnesota,
Minneapolis, MN, 55455, USA

SOURCE: Journal of the American Chemical Society (2002),
124(16), 4384-4393
CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The complexes $\text{Fe}_2(\text{OCHPh}_2)_6$ and L_2FeOR ($\text{R} = \text{Et}$ or CHPh_2 , $\text{L} = \text{N,N}'\text{-bis(trimethylsilyl)benzamidinate}$) were structurally characterized, and comparative studies of the behavior of those compds. comprising the same alkoxide ($\text{Ph}_2\text{HCO-}$) in **polymns.** of ϵ -caprolactone (CL) and D,L-lactide (LA) were performed. Both $\text{Fe}_2(\text{OCHPh}_2)_6$ and $\text{L}_2\text{FeOCHPh}_2$ are effective **polymerization** catalysts, as reflected by mol. weight control, polydispersities, and end group anal., but the diiron complex generally exhibits greater **polymerization** control, particularly for CL. Kinetic investigations of the **polymerization** of CL revealed the same first-order dependence on [CL] for both catalysts, but different orders in [catalyst] that signified a distinct contrast in mechanism. Anal. that invoked the presence of a termination-causing impurity at low concentration yielded a first-order dependence on $[\text{Fe}_2(\text{OCHPh}_2)_6]$, but the order in $[\text{L}_2\text{FeOCHPh}_2]$ was found to be one-half. This fractional dependence was interpreted by using a model of active chain aggregation. Comparison of the derived propagation rate consts. (k_{prop}) revealed a .apprx.50-fold greater value for the diiron complex compared to the single site mononuclear compound. Implications of these findings for understanding **cyclic ester polymerization** mechanisms and catalyst design are discussed.

IT 26680-10-4P, D,L-Lactide homopolymer
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(preparation and characterization of novel iron(III)-alkoxide complex catalysts for **cyclic ester polymerization**)

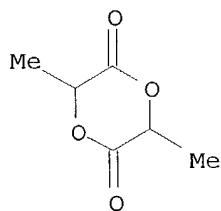
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67, 78

- ST iron alkoxide complex **cyclic ester polymn**
catalyst; caprolactone **polymn** kinetics iron alkoxide complex
catalyst; lactide **polymn** kinetics iron alkoxide complex catalyst
- IT Bond angle
Bond length
Molecular weight
Polydispersity
Polymerization
Polymerization catalysts
Polymerization kinetics
(preparation and characterization of novel iron(III)-alkoxide complex
catalysts for **cyclic ester polymerization**)
- IT Polyesters, preparation
RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(**Preparation**)
(preparation and characterization of novel iron(III)-alkoxide complex
catalysts for **cyclic ester polymerization**)
- IT 137931-06-7P 428500-17-8P
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(**Preparation**); RACT (Reactant or reagent)
(intermediate; preparation and characterization of novel iron(III)-alkoxide
complex catalysts for **cyclic ester polymn**
.)
- IT 428517-93-5P 428517-94-6P 428517-95-7P
RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation);
PREP (**Preparation**); USES (Uses)
(preparation and characterization of novel iron(III)-alkoxide complex
catalysts for **cyclic ester polymerization**)
- IT 502-44-3, ϵ -Caprolactone
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation and characterization of novel iron(III)-alkoxide complex
catalysts for **cyclic ester polymerization**)
- IT 24980-41-4P, Poly(ϵ -caprolactone) 25248-42-4P,
Poly(ϵ -caprolactone), sru 26023-30-3P, D,L-Lactide homopolymer,
sru 26680-10-4P, D,L-Lactide homopolymer
RL: PRP (Properties); **SPN** (**Synthetic preparation**); **PREP**
(**Preparation**)
(preparation and characterization of novel iron(III)-alkoxide complex
catalysts for **cyclic ester polymerization**)
- IT 20398-06-5, Thallium ethoxide 148422-47-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(starting material; preparation and characterization of novel
iron(III)-alkoxide complex catalysts for **cyclic ester**
polymerization)

REFERENCE COUNT: 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 21 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:54520 CAPLUS
DOCUMENT NUMBER: 136:247960

TITLE: First Example of N-Heterocyclic Carbenes as Catalysts for Living **Polymerization**: Organocatalytic Ring-Opening **Polymerization** of **Cyclic Esters**

AUTHOR(S): Connor, Eric F.; Nyce, Gregory W.; Myers, Matthew; Moeck, Andreas; Hedrick, James L.

CORPORATE SOURCE: IBM Almaden Research, San Jose, CA, 95120, USA

SOURCE: Journal of the American Chemical Society (2002), 124(6), 914-915
CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A novel metal-free, organocatalytic approach to living **polymerization** is presented. N-heterocyclic carbenes were employed as nucleophilic catalysts for the ring-opening **polymerization** (ROP) of **cyclic ester** monomers. The catalysts is used in combination with an initiator, such as an alc., which generates an α -end group bearing the ester from the initiating alc. upon ring-opening and a hydroxyl functional ω -chain end that propagates the chain. This class of catalyst proved to be more reactive than tertiary amine and phosphine nucleophiles, producing narrowly dispersed polymers of predictable mol. wts. at room temperature in 1-2 h. Catalysis with respect to both initiating alc. and monomer was observed. Control of the α and ω end-groups was demonstrated with a pyrene-labeled initiator, allowing the preparation of well-defined macromol. architectures. Analogous to the ROP of **cyclic esters** using biocatalysts, the **polymerization** pathway using the N-heterocyclic carbenes is believed to ensue through a monomer-activated mechanism.

IT 33135-50-1P, Poly(L-lactide)

RL: SPN (Synthetic preparation); PREP (Preparation)
(living ring-opening **polymerization** of lactides and lactones with 1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene catalyst)

RN 33135-50-1 CAPLUS

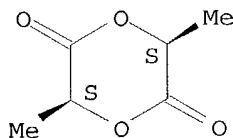
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



CC 35-3 (Chemistry of Synthetic High Polymers)

ST living ring opening cationic **polymn cyclic ester** carbene catalyst; lactide caprolactone butyrolactone living **polymn** bistrimethylphenylimidazolylidene

IT **Polymerization** catalysts
(cationic, ring-opening, living; living ring-opening **polymerization** of lactides and lactones with 1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene catalyst)

IT Polyesters, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(living ring-opening **polymerization** of lactides and lactones with 1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene catalyst)

IT Polyoxyalkylenes, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(**polymerization** initiator, 6-arm; living ring-opening **polymn** of lactides and lactones with 1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene catalyst)

IT 141556-42-5
RL: CAT (Catalyst use); USES (Uses)
(living ring-opening **polymerization** of lactides and lactones with 1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene catalyst)

IT 24980-41-4P, Poly(ϵ -caprolactone) 25248-42-4P, Poly[oxy(1-oxo-1,6-hexanediyl)] 26161-42-2P 26744-04-7P, Poly(β -butyrolactone), SRU 33135-50-1P, Poly(L-lactide) 36486-76-7P, Poly(β -butyrolactone)
RL: **SPN (Synthetic preparation); PREP (Preparation)**
(living ring-opening **polymerization** of lactides and lactones with 1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene catalyst)

IT 25322-69-4, Polypropylene glycol
RL: RCT (Reactant); RACT (Reactant or reagent)
(**polymerization** initiator, 6-arm; living ring-opening **polymn** of lactides and lactones with 1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene catalyst)

IT 100-51-6, Benzyl alcohol, reactions 67000-89-9, 1-Pyrenebutanol
RL: RCT (Reactant); RACT (Reactant or reagent)
(**polymerization** initiator; living ring-opening **polymerization** of lactides and lactones with 1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene catalyst)

REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 22 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:851277 CAPLUS

DOCUMENT NUMBER: 136:6523

TITLE: Polymers based on heterocyclic monomers, their production and use of stannylenes and germylenes as catalysts therefor

INVENTOR(S): Dumitrescu, Anca; Gornitzka, Heinz; Martin-Vaca, Blanca; Bourissou, Didier; Bertrand, Guy; Cazaux, Jean-Bernard

PATENT ASSIGNEE(S): Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.), Fr.; Centre National de la Recherche Scientifique (C.N.R.S.)

SOURCE: PCT Int. Appl., 20 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: French
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|--|----------|
| WO 2001088014 | A1 | 20011122 | WO 2001-FR1405 | 20010510 |
| W: | | | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | |
| RW: | | | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | |
| EP 1290062 | A1 | 20030312 | EP 2001-934071 | 20010510 |
| R: | | | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | |
| US 2003153717 | A1 | 20030814 | US 2002-275332 | 20021107 |
| NO 2002005410 | A | 20021112 | NO 2002-5410 | 20021112 |
| PRIORITY APPLN. INFO.: | | | EP 2000-401309 A | 20000515 |
| | | | WO 2001-FR1405 W | 20010510 |

OTHER SOURCE(S): MARPAT 136:6523

AB The invention concerns the use of stannylenes and germylenes ML₁L₂ (M = Sn, Ge; L₁, L₂ = organic groups containing Si, N, P, O, and/or S; M, L₁, and/or L₂ may be linked in a cyclic manner) as catalysts for the ring-opening **polymerization** of cyclic ethers such as epoxides and/or **cyclic esters** of lactic or glycolic acid. The catalysts are suitable for production of random or sequenced copolymers. Examples of copolymn. of D,L-lactide with glycolide using [(Me₃Si)₂N]₂Sn and [[(Me₃Si)₂N]Sn(OBu-tert)]₂ were given.

IT **107131-72-6P**, D,L-Lactide-glycolide block copolymer
 RL: **IMF (Industrial manufacture); PREP (Preparation)**
 (stannylene catalyst for production of)

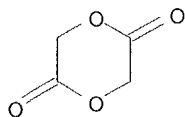
RN 107131-72-6 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 1,4-dioxane-2,5-dione, block (9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6

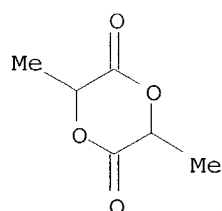
CMF C4 H4 O4



CM 2

CRN 95-96-5

CMF C6 H8 O4



IT 26780-50-7P, D,L-Lactide-glycolide copolymer

RL: IMF (Industrial manufacture); PREP (Preparation)
(stannylene catalysts for production of)

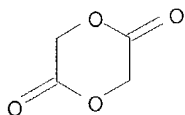
RN 26780-50-7 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 1,4-dioxane-2,5-dione
(9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6

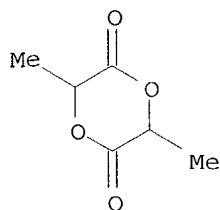
CMF C4 H4 O4



CM 2

CRN 95-96-5

CMF C6 H8 O4



IC ICM C08G065-26
 ICS C08G063-82; C08G065-12; B01J031-12
 CC 35-3 (Chemistry of Synthetic High Polymers)
 ST stannylene catalyst **polymn** glycolide lactide; germylene catalyst
polymn epoxide **cyclic ester**
 IT Polyesters, preparation
 RL: IMF (Industrial manufacture); **PREP (Preparation)**
 (dilactone-based; stannylene catalysts for production of)
 IT **Polymerization** catalysts
 (ring-opening, stannylene and germylene; for copolymn. of lactide with
 glycolide)
 IT Polyoxyalkylenes, preparation
 RL: IMF (Industrial manufacture); **PREP (Preparation)**
 (stannylene and germylene catalysts for production of)
 IT 55147-78-9 123148-32-3
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst for copolymn. of lactide with glycolide)
 IT **107131-72-6P**, D,L-Lactide-glycolide block copolymer
 RL: **IMF (Industrial manufacture); PREP (Preparation)**
 (stannylene catalyst for production of)
 IT **26780-50-7P**, D,L-Lactide-glycolide copolymer
 RL: **IMF (Industrial manufacture); PREP (Preparation)**
 (stannylene catalysts for production of)
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 23 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:541448 CAPLUS
 DOCUMENT NUMBER: 135:331685
 TITLE: **Polymerization** of lactide and related
cyclic esters by discrete metal
 complexes
 AUTHOR(S): O'Keefe, Brendan J.; Hillmyer, Marc A.; Tolman,
 William B.
 CORPORATE SOURCE: Department of Chemistry, University of Minnesota,
 Minneapolis, MN, 55455-0431, USA
 SOURCE: Journal of the Chemical Society, Dalton Transactions
 (2001), (15), 2215-2224
 CODEN: JCSDA; ISSN: 1472-7773
 PUBLISHER: Royal Society of Chemistry
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: English

AB A review with refs. This perspective highlights recent research on the preparation of polyesters by the ring-opening **polymerization** of **cyclic esters** employing well-characterized metal complexes. Particular focus is placed on the preparation of polylactide because of environmental advantages: it is biodegradable and its feedstock, lactide, is a renewable resource. A recurring theme is the correlation of precatalyst structure, often by X-ray crystallog., with **polymerization** activity and selectivity. Through this systematic approach to the deconvolution of catalyst structure/reactivity relationships, improved mechanistic understanding has been attained and key design criteria required for the development of new catalysts that exert control over the mol. parameters of polyesters and related copolymers have been revealed.

IT 26680-10-4P, Polylactide

RL: SPN (Synthetic preparation); PREP (Preparation)
(polymerization of lactide and related **cyclic esters** by discrete metal complexes)

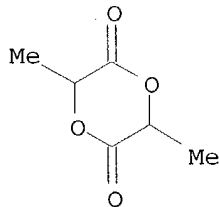
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



CC 35-0 (Chemistry of Synthetic High Polymers)

ST review lactide **polymn** catalyst structure; metal complex catalyst **polymn** lactide review

IT Molecular structure-property relationship
(catalyst activity; **polymerization** of lactide and related **cyclic esters** by discrete metal complexes)

IT Rare earth complexes

RL: CAT (Catalyst use); USES (Uses)
(polymerization of lactide and related **cyclic esters** by discrete metal complexes)

IT Polyesters, preparation

RL: SPN (Synthetic preparation); PREP (Preparation)
(polymerization of lactide and related **cyclic esters** by discrete metal complexes)

IT **Polymerization** catalysts

(ring-opening; **polymerization** of lactide and related **cyclic esters** by discrete metal complexes)

IT 7429-90-5D, Aluminum, complexes, uses 7439-89-6D, Iron, complexes, uses
 7439-95-4D, Magnesium, complexes, uses 7440-31-5D, Tin, complexes, uses
 7440-32-6D, Titanium, complexes, uses 7440-65-5D, Yttrium, complexes,
 uses 7440-66-6D, Zinc, complexes, uses
 RL: CAT (Catalyst use); USES (Uses)

(polymerization of lactide and related cyclic
 esters by discrete metal complexes)

IT 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] 26680-10-4P
 , Polylactide

RL: SPN (Synthetic preparation); PREP (Preparation)
 (polymerization of lactide and related cyclic
 esters by discrete metal complexes)

REFERENCE COUNT: 55 THERE ARE 55 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 24 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:435157 CAPLUS

DOCUMENT NUMBER: 135:46664

TITLE: Process for the preparation of polymers of dimeric
 cyclic esters

INVENTOR(S): Baker, Gregory L.; Smith, Milton R., III

PATENT ASSIGNEE(S): Michigan State University, USA

SOURCE: PCT Int. Appl., 105 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|--|----------|-----------------|----------|
| WO 2001042333 | A2 | 20010614 | WO 2000-US33869 | 20001213 |
| WO 2001042333 | A3 | 20011206 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | |
| US 2001044514 | A1 | 20011122 | US 2000-736991 | 20001213 |
| US 6469133 | B2 | 20021022 | | |

PRIORITY APPLN. INFO.: US 1999-170425P P 19991213

AB The present invention provides a process for the direct synthesis of high melting polymers made from dimeric **cyclic esters**. In particular, the present invention provides a process for synthesis of polylactic acid (PLA) from racemic materials such as racemic lactide and polymandelide from mandelide. The process further provides racemic metal organic ligand catalysts such as racemic salbinap that catalyzes the **polymerization** of racemic dimeric **cyclic ester**

monomers to a polylactide stereocomplex. Polymandelide and mixed dimeric **cyclic esters** are also prepared in the presence of low amts. of water.

IT 26680-10-4P, Lactide homopolymer 33135-50-1P, L-Lactide homopolymer 344425-21-4P 344425-26-9P 344425-27-0P 344425-28-1P

RL: IMF (Industrial manufacture); PREP (Preparation)
(process for the preparation of polymers of dimeric **cyclic esters**)

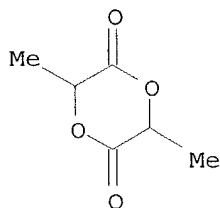
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



RN 33135-50-1 CAPLUS

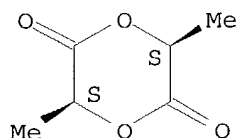
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



RN 344425-21-4 CAPLUS

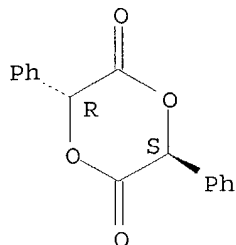
CN 1,4-Dioxane-2,5-dione, 3,6-diphenyl-, (3R,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 344425-20-3

CMF C16 H12 O4

Absolute stereochemistry.



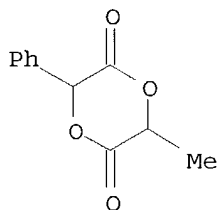
RN 344425-26-9 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3-methyl-6-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 344425-23-6

CMF C11 H10 O4



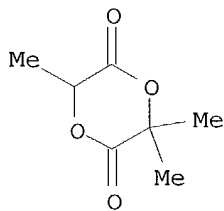
RN 344425-27-0 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,3,6-trimethyl-, homopolymer (9CI) (CA INDEX NAME)

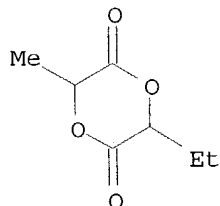
CM 1

CRN 249890-65-1

CMF C7 H10 O4



RN 344425-28-1 CAPLUS
 CN 1,4-Dioxane-2,5-dione, 3-ethyl-6-methyl-, homopolymer (9CI) (CA INDEX NAME)
 CM 1
 CRN 344425-22-5
 CMF C7 H10 O4



IC ICM C08G063-08
 ICS C08G063-82
 CC 35-7 (Chemistry of Synthetic High Polymers)
 ST **cyclic ester dimer polymn**; polylactic acid
 manuf; polymandelide manuf
 IT **Polymerization**
 Polymerization catalysts
 (process for the preparation of polymers of dimeric **cyclic esters**)
 IT Polyesters, preparation
 RL: IMF (Industrial manufacture); **PREP (Preparation)**
 (process for the preparation of polymers of dimeric **cyclic esters**)
 IT 226927-22-6 261360-89-8
 RL: CAT (Catalyst use); **USES (Uses)**
 (process for the preparation of polymers of dimeric **cyclic esters**)
 IT 26023-30-3P, Poly(lactide), sru 26161-42-2P, L-Lactide homopolymer, sru
 26680-10-4P, Lactide homopolymer 28702-32-1P **33135-50-1P**
 , L-Lactide homopolymer 49741-67-5P, Poly[oxy(1-oxo-2-phenyl-1,2-ethanediyl)] **344425-21-4P 344425-26-9P**
344425-27-0P 344425-28-1P
 RL: **IMF (Industrial manufacture); PREP (Preparation)**
 (process for the preparation of polymers of dimeric **cyclic esters**)
 IT 4026-18-0P, 2-Hydroxy-3-methylbutyric acid 21150-70-9P 249890-65-1P
 344425-22-5P 344425-23-6P 344425-24-7P 344425-25-8P
 RL: IMF (Industrial manufacture); **RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)**
 (process for the preparation of polymers of dimeric **cyclic esters**)
 IT 72-18-4, Valine, reactions 90-64-2, Mandelic acid 97-93-8, reactions
 563-76-8, 2-Bromopropionyl bromide 594-61-6, 2-Hydroxyisobutyric acid

600-15-7, 2-Hydroxybutyric acid 611-71-2 17199-29-0, S-Mandelic acid
140141-56-6

RL: RCT (Reactant); RACT (Reactant or reagent)
(process for the preparation of polymers of dimeric **cyclic esters**)

L32 ANSWER 25 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:306259 CAPLUS

DOCUMENT NUMBER: 135:92897

TITLE: A Novel and Versatile Calcium-Based Initiator System
for the Ring-Opening **Polymerization of Cyclic Esters**

AUTHOR(S): Zhong, Zhiyuan; Dijkstra, Pieter J.; Birg, Christin;
Westerhausen, Matthias; Feijen, Jan

CORPORATE SOURCE: Department of Chemical Technology and Institute for
Biomedical Technology, University of Twente, Enschede,
7500 AE, Neth.

SOURCE: Macromolecules (2001), 34(12), 3863-3868
CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB An efficient calcium alkoxide initiating system was developed, which is
generated in situ from bis(tetrahydrofuran)calcium-
bis[bis(trimethylsilyl)amide] $[Ca[N(SiMe_3)_2]_2(THF)_2]$ and an alc., for the
ring-opening **polymerization of cyclic esters**. The
solution **polymerization** in THF using mild conditions follows a living
mechanism, yielding polyesters of controlled mol. weight and tailored
macromol. architecture. The **polymns.** initiated with the
2-propanol- $Ca[N(SiMe_3)_2]_2(THF)_2$ system are first-order in monomer with no
induction period. At high 2-propanol/ $Ca[N(SiMe_3)_2]_2(THF)_2$ ratios,
complete conversion of 2-propanol occurs due to fast and reversible
transfer between dormant and active species.

IT 33135-50-1P, Poly(L-lactide) 111821-20-6P,
L-Lactide-ε-caprolactone block copolymer 131151-09-2P,
Poly(ethylene glycol)-L-lactide block copolymer

RL: SPN (**Synthetic preparation**); PREP (**Preparation**)
(calcium-trimethylsilylamido-THF initiator in ring-opening
polymerization of cyclic esters)

RN 33135-50-1 CAPLUS

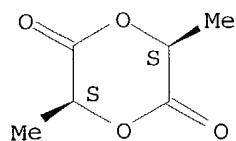
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA
INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



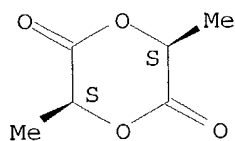
RN 111821-20-6 CAPLUS
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with 2-oxepanone,
 block (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

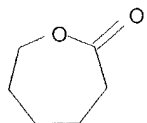
Absolute stereochemistry.



CM 2

CRN 502-44-3

CMF C6 H10 O2



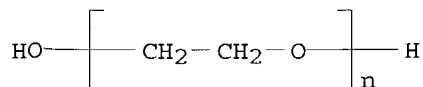
RN 131151-09-2 CAPLUS
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with
 α -hydro- ω -hydroxypoly(oxy-1,2-ethanediyl), block (9CI) (CA
 INDEX NAME)

CM 1

CRN 25322-68-3

CMF (C2 H4 O)_n H2 O

CCI PMS

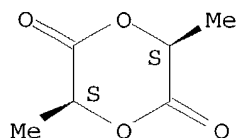


CM 2

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67

ST calcium alkoxide initiator in situ prepn; THF calcium trimethylsilylimide precursor initiator **polymn**; ring opening **polymn** **cyclic ester** calcium alkoxide initiator

IT Reactivity ratio in **polymerization**
(calcium-trimethylsilylamido-THF initiator in ring-opening **polymerization of cyclic esters**)

IT Polyesters, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(calcium-trimethylsilylamido-THF initiator in ring-opening **polymerization of cyclic esters**)

IT **Polymerization**
Polymerization catalysts
Polymerization kinetics
(ring-opening; calcium-trimethylsilylamido-THF initiator in ring-opening **polymerization of cyclic esters**)

IT 67-63-0, 2-Propanol, uses 133644-59-4, Bis(bis(trimethylsilyl)amido)bis(tetrahydrofuran)calcium
RL: CAT (Catalyst use); **USES (Uses)**
(alkoxide initiator precursor; calcium-trimethylsilylamido-THF initiator in ring-opening **polymerization of cyclic esters**)

IT 502-44-3, ϵ -Caprolactone
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(calcium-trimethylsilylamido-THF initiator in ring-opening **polymerization of cyclic esters**)

IT 24980-41-4P, Poly(ϵ -caprolactone) 25248-42-4P,
Poly[oxy(1-oxo-1,6-hexanediyl)] 26161-42-2P **33135-50-1P**,
Poly(L-lactide) **111821-20-6P**, L-Lactide- ϵ -caprolactone

block copolymer 131151-09-2P, Poly(ethylene glycol)-L-lactide
block copolymer

RL: **SPN (Synthetic preparation); PREP (Preparation)**
(calcium-trimethylsilylamido-THF initiator in ring-opening
polymerization of cyclic esters)

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 26 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:221201 CAPLUS

DOCUMENT NUMBER: 135:5946

TITLE: **Polymerization** of lactones and D,L-lactide
initiated by lanthanum isopropoxide

AUTHOR(S): Save, M.; Soum, A.

CORPORATE SOURCE: Laboratoire de Chimie des Polymeres Organiques, UMR
5629, E.N.S.C.P.B., Talence, 33402, Fr.

SOURCE: Polymer Preprints (American Chemical Society, Division
of Polymer Chemistry) (2001), 42(1), 655-656
CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer
Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

AB Controlled **polymerization** of several **cyclic esters**
is possible using the highly reactive lanthanum isopropoxide initiator.
Kinetic, viscosimetry and ¹³C NMR studies have been carried out in order
to better understand the mechanism of **polymerization**

IT **26680-10-4P**, Lactide homopolymer

RL: PRP (Properties); **SPN (Synthetic preparation); PREP**
(Preparation)

(**Polymerization** of lactones and D,L-lactide initiated by lanthanum
isopropoxide)

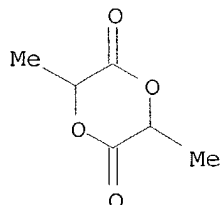
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



CC 35-7 (Chemistry of Synthetic High Polymers)

ST lactones lactide ring opening **polymn** lanthanum isopropoxide

catalyst kinetics

IT Polyesters, reactions
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(lactide; **polymerization** of lactones and D,L-lactide initiated by lanthanum isopropoxide)

IT Polyesters, preparation
RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(**Preparation**)
(lactone-based; **polymerization** of lactones and D,L-lactide initiated by lanthanum isopropoxide)

IT **Polymerization** catalysts
(ring-opening; **Polymerization** of lactones and D,L-lactide initiated by lanthanum isopropoxide)

IT **Polymerization** kinetics
(ring-opening; **polymerization** of lactones and D,L-lactide initiated by lanthanum isopropoxide)

IT 95-96-5, Lactide
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(**Polymerization** of lactones and D,L-lactide initiated by lanthanum isopropoxide)

IT 24980-41-4P, ϵ -Caprolactone homopolymer 25248-42-4P, ϵ -Caprolactone homopolymer, SRU 26023-30-3P, Lactide homopolymer, SRU 26354-94-9P, δ -Valerolactone homopolymer 26499-05-8P, δ -Valerolactone homopolymer, SRU **26680-10-4P**, Lactide homopolymer 26744-04-7P, β -Butyrolactone homopolymer, SRU 34853-80-0P 36486-76-7P, β -Butyrolactone homopolymer 342420-91-1P
RL: PRP (Properties); **SPN** (**Synthetic preparation**); **PREP** (**Preparation**)
(**Polymerization** of lactones and D,L-lactide initiated by lanthanum isopropoxide)

IT 19446-52-7, Lanthanum isopropoxide
RL: CAT (Catalyst use); **USES** (Uses)
(**polymerization** catalyst, ring-opening; **polymerization** of lactones and D,L-lactide initiated by lanthanum isopropoxide)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 27 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:26799 CAPLUS

DOCUMENT NUMBER: 134:237877

TITLE: Lactide **polymerization** activity of alkoxide, phenoxide, and amide derivatives of yttrium(III) arylamidinates

AUTHOR(S): Aubrecht, Katherine B.; Chang, Karen; Hillmyer, Marc A.; Tolman, William B.

CORPORATE SOURCE: Department of Chemistry, University of Minnesota, Minneapolis, MN, 55455, USA

SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry (2000), Volume Date 2001, 39(2), 284-293
CODEN: JPACEC; ISSN: 0887-624X

PUBLISHER: John Wiley & Sons, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB In quest of new, single-site catalysts for **cyclic ester polymns.**, a series of mononuclear yttrium(III) complexes of N,N'-bis(trimethylsilyl)benzamidinate ([LTMS]-) and hindered N,N'-bis-(2,6-dialkylaryl)toluamidinates ([LEt]-, aryl = Et₂C₆H₃, and [LiPr]-, aryl = iPr₂C₆H₃) were synthesized and characterized by X-ray diffraction: L₂TMSY(μ -Cl)₂Li(TMEDA) (1), L₂TMSY(OC₆H₂tBu₂Me) (2), L₂TMSY(OC₆H₃Me₂)₂Li(THF)₄ (3), L₂TMSY(μ -OtBu)₂Li(THF) (4), LiPrY[N(SiMe₂H)₂]₂(THF) (5), L₂EtY(THF)(Cl)(μ -Cl)Li(THF)₃ (6), and L₂EtY[N(SiMe₂H)₂] (7). Coordination nos. ranging from five to seven were observed, and they appeared to be controlled by the steric bulk of the supporting amidinate and alkoxide, phenoxide, or amide coligands. Complexes 2-5 and 7 are active catalysts for the **polymerization** of D,L-lactide (e.g., with 2 and added benzyl alc., 1000 equiv of D,L-lactide were **polymerized** at room temperature in less than 1 h, with polydispersities less than 1.5). The neutral complexes 2, 5, and 7 were more effective than the anionic complexes 3 and 4. In addition, the presence of the more hindered amidinate ligands [LEt]- and [LiPr]- on yttrium-amides slowed the **polymns.** (7 < 5 < Y[N(SiMe₂H)₂]₃).

IT 26680-10-4P, D,L-Lactide homopolymer

RL: SPN (Synthetic preparation); PREP (Preparation)

(lactide **polymerization** activity of alkoxide, phenoxide, and amide derivs. of yttrium(III) arylamidinates)

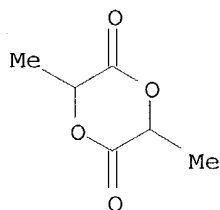
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 75, 78

ST yttrium amidinate single site catalyst lactide ring opening **polymn**
; crystal structure yttrium amidinate complex **polymn** catalyst

IT Crystal structure

Molecular structure

(lactide **polymerization** activity of alkoxide, phenoxide, and amide derivs. of yttrium(III) arylamidinates)

IT Polyesters, preparation

RL: SPN (Synthetic preparation); PREP (Preparation)

(lactide **polymerization** activity of alkoxide, phenoxide, and amide

derivs. of yttrium(III) arylamidates)

IT **Polymerization** catalysts
(ring-opening, single-site; lactide **polymerization** activity of
alkoxide, phenoxide, and amide derivs. of yttrium(III) arylamidates)

IT 330442-66-5P 330442-73-4P
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(**Preparation**); RACT (Reactant or reagent)
(catalyst precursor; lactide **polymerization** activity of alkoxide,
phenoxide, and amide derivs. of yttrium(III) arylamidates)

IT 10361-92-9, Yttrium trichloride 148422-47-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(catalyst synthesis; lactide **polymerization** activity of alkoxide,
phenoxide, and amide derivs. of yttrium(III) arylamidates)

IT 176697-09-9P 330442-68-7P 330442-69-8P 330442-70-1P 330442-75-6P
RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(lactide **polymerization** activity of alkoxide, phenoxide, and amide
derivs. of yttrium(III) arylamidates)

IT 865-48-5, tert-Butanol, sodium salt 24560-29-0 42031-71-0 73612-22-3
160952-40-9 330442-71-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(lactide **polymerization** activity of alkoxide, phenoxide, and amide
derivs. of yttrium(III) arylamidates)

IT 330442-74-5P
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(**Preparation**); RACT (Reactant or reagent)
(lactide **polymerization** activity of alkoxide, phenoxide, and amide
derivs. of yttrium(III) arylamidates)

IT 26023-30-3P, D,L-Lactide homopolymer, SRU 26680-10-4P,
D,L-Lactide homopolymer
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(lactide **polymerization** activity of alkoxide, phenoxide, and amide
derivs. of yttrium(III) arylamidates)

IT 117696-82-9P 200116-58-1P
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(**Preparation**); RACT (Reactant or reagent)
(ligand synthesis, intermediate; lactide **polymerization** activity of
alkoxide, phenoxide, and amide derivs. of yttrium(III) arylamidates)

IT 579-66-8, 2,6-Diethylaniline 874-60-2, p-Toluoyl chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(ligand synthesis; lactide **polymerization** activity of alkoxide,
phenoxide, and amide derivs. of yttrium(III) arylamidates)

IT 330442-72-3P
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(**Preparation**); RACT (Reactant or reagent)
(ligand; lactide **polymerization** activity of alkoxide, phenoxide, and
amide derivs. of yttrium(III) arylamidates)

REFERENCE COUNT: 69 THERE ARE 69 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 28 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:419430 CAPLUS

DOCUMENT NUMBER: 133:151029
 TITLE: **Polymerizations** of ϵ -caprolactone
 and L,L-dilactide initiated with stannous octoate and
 stannous butoxide - a comparison
 AUTHOR(S): Duda, Andrzej; Penczek, Stanislaw; Kowalski, Adam;
 Libiszowski, Jan
 CORPORATE SOURCE: Department of Polymer Chemistry, Center of Molecular
 and Macromolecular Studies, Polish Academy of
 Sciences, Lodz, 90-363, Pol.
 SOURCE: Macromolecular Symposia (2000), 153(Recent Advances in
 Ring Opening (Metathesis) Polymerization), 41-53
 CODEN: MSYMEC; ISSN: 1022-1360
 PUBLISHER: Wiley-VCH Verlag GmbH
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB **Polymns.** of ϵ -caprolactone (CL) and L,L-dilactide (LA)
 initiated with stannous octoate $\text{Sn}(\text{O}(\text{O})\text{CCH}(\text{C}_4\text{H}_9)\text{C}_2\text{H}_5)_2$ ($\text{Sn}(\text{Oct})_2$),
 $\text{Sn}(\text{Oct})_2/\text{C}_4\text{H}_9\text{OH}$, stannous butoxide ($\text{Sn}(\text{OC}_4\text{H}_9)_2$), and
 $\text{Sn}(\text{OC}_4\text{H}_9)_2/\text{C}_2\text{H}_5(\text{C}_4\text{H}_9)\text{CHC}(\text{O})\text{OH}$ were studied. It is shown, on the basis of
 the pertinent kinetic data and MALDI-TOF evidence, that **polymerization**
 of **cyclic esters** initiated by $\text{Sn}(\text{Oct})_2$ in the presence
 of ROH as coinitiator proceeds on the tin(II) alkoxide (...-Sn-OR) active
 centers. $\text{Sn}(\text{OC}_4\text{H}_9)_2$ initiator behaves as other covalent metal alkoxides,
 i.e.: initiation is fast and quant., every alkoxide group in $\text{Sn}(\text{OC}_4\text{H}_9)_2$
 starts growth of one macromol., and monomer addition proceeds with the
 acyl-oxygen bond scission. **Polymerization** in the LA/ $\text{Sn}(\text{OC}_4\text{H}_9)_2$ system
 is a living process and can be controlled in a wide range of molar masses,
 from $M_n = 103$ to 106. Kinetic convergence of the **polymns.**
 initiated with $\text{Sn}(\text{Oct})_2/\text{C}_4\text{H}_9\text{OH}$, and $\text{Sn}(\text{OC}_4\text{H}_9)_2/\text{C}_2\text{H}_5(\text{C}_4\text{H}_9)\text{CHC}(\text{O})\text{O H}$ points
 to an identity of growing species in both systems.

IT 33135-50-1P, L,-Dilactide homopolymer
 RL: **SPN (Synthetic preparation); PREP (Preparation)**
 (**polymns.** of ϵ -caprolactone and L,L-dilactide
 initiated with stannous octoate and stannous butoxide)

RN 33135-50-1 CAPLUS

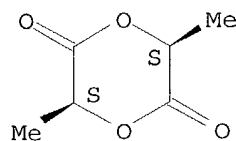
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA
 INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



CC 35-7 (Chemistry of Synthetic High Polymers)
ST caprolactone dilactide **polymn** catalyst stannous octoate butoxide
IT **Polymerization** catalysts
(ring-opening; **polymns.** of ϵ -caprolactone and
L,L-dilactide initiated with stannous octoate and stannous butoxide)
IT 71-36-3, n-Butanol, uses 149-57-5 301-10-0, Stannous octoate
26306-46-7, Stannous butoxide
RL: CAT (Catalyst use); USES (Uses)
(**polymns.** of ϵ -caprolactone and L,L-dilactide
initiated with stannous octoate and stannous butoxide)
IT 24980-41-4P, ϵ -Caprolactone homopolymer 26161-42-2P, L,-Lactide
homopolymer, sru 33135-50-1P, L,-Dilactide homopolymer
RL: **SPN (Synthetic preparation); PREP (Preparation)**
(**polymns.** of ϵ -caprolactone and L,L-dilactide
initiated with stannous octoate and stannous butoxide)
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 29 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:298716 CAPLUS

DOCUMENT NUMBER: 133:59184

TITLE: Controlled ring-opening **polymerization** of
L-lactide and 1,5-Dioxepan-2-one forming a triblock
copolymer

AUTHOR(S): Stridsberg, Kajsa; Albertsson, Ann-Christine

CORPORATE SOURCE: Department of Polymer Technology, Royal Institute of
Technology, Stockholm, S-100 44, Swed.

SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry
(2000), 38(10), 1774-1784
CODEN: JPACEC; ISSN: 0887-624X

PUBLISHER: John Wiley & Sons, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Novel elastomeric A-B-A triblock copolymers were successfully synthesized
in a new two-step process: controlled ring-opening **polymerization** of
the **cyclic ether-ester** 1,5-dioxepan-2-one as the
amorphous middle block (B-block) followed by addition and **polymerization**
of the two semicryst. L-lactide blocks (A-block). A 1,1,6,6-tetrabutyl-
1,6-distanna-2,5,7,10-tetraoxacyclodecane initiator system was utilized
and the reaction was performed in chloroform at 60°C. A good
control of the synthesis was obtained, resulting in well defined triblock
copolymers. The mol. weight and chemical composition were easily adjusted by
the

monomer-to-initiator ratio. The triblock copolymers formed exhibited
semicrystallinity up to a content of 1,5-dioxepan-2-one as high as 89% as
determined by DSC. WAXS investigation of the triblock copolymers showed a
crystal structure similar to that of the pure poly(L-lactide).

IT 276686-93-2P, 1,5-Dioxepan-2-one-L-lactide block copolymer

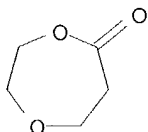
RL: PRP (Properties); **SPN (Synthetic preparation); PREP**
(**Preparation**)

(triblock; ring-opening block **polymerization** of lactide with
dioxepanone)

RN 276686-93-2 CAPLUS
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with
1,4-dioxepan-5-one, block (9CI) (CA INDEX NAME)

CM 1

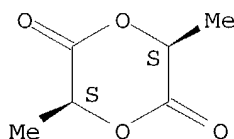
CRN 35438-57-4
CMF C5 H8 O3



CM 2

CRN 4511-42-6
CMF C6 H8 O4

Absolute stereochemistry.



CC 35-7 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 39
ST dioxepanone lactide ring opening block **polymn**; polyether
polyester block elastomer; stannane cyclic ether initiator block
polymn
IT **Polymerization** catalysts
(block, ring-opening; for lactide with dioxepanone)
IT **Polymerization**
(block, ring-opening; of lactide with dioxepanone)
IT Crystallinity
Fusion enthalpy
(of lactide-dioxepanone triblock copolymers)
IT Polyethers, preparation
Polyethers, preparation
RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(**Preparation**)
(polyester-, block, triblock; from ring-opening block **polymerization**
of lactide with dioxepanone)
IT Polyesters, preparation
Polyesters, preparation

RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(Preparation)
 (polyether-, block, triblock; from ring-opening block **polymerization**
 of lactide with dioxepanone)

IT **Polymerization** catalysts
 (ring-opening, block; for lactide with dioxepanone)

IT **Polymerization**
 (ring-opening, block; of lactide with dioxepanone)

IT 3590-59-8 5271-60-3, 1,1,6,6-Tetrabutyl-1,6-distanna-2,5,7,10-
 tetraoxacyclodecane
 RL: CAT (Catalyst use); USES (Uses)
 (catalysts for ring-opening block **polymerization** of lactide with
 dioxepanone)

IT 7732-18-5, Water, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (effect on ring-opening block **polymerization** of lactide with
 dioxepanone)

IT **276686-93-2P**, 1,5-Dioxepan-2-one-L-lactide block copolymer
 RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(Preparation)
 (triblock; ring-opening block **polymerization** of lactide with
 dioxepanone)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 30 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:290656 CAPLUS

DOCUMENT NUMBER: 132:308855

TITLE: Copolymers of ϵ -caprolactone and
cyclic esters of alpha-hydroxyacids
 and polyurethanes derivable from these polymers

INVENTOR(S): Dutton, Amanda Jane; Derbyshire, Stewart; Wasson,
 Robert Craig

PATENT ASSIGNEE(S): Solvay (Societe Anonyme), Belg.

SOURCE: Eur. Pat. Appl., 9 pp.
 CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| EP 997487 | A1 | 20000503 | EP 1998-308858 | 19981029 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| WO 2000026273 | A1 | 20000511 | WO 1999-EP8142 | 19991021 |
| W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, | | | | |

AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE,
 DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,
 CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: EP 1998-308858 19981029

AB The copolymer having a viscosity <2000 cP is prepared by the **polymn**
 . of 1.5 mol a lactone or its an aliphatic hydroxy acid and 1 mol a
cyclic dimeric ester of α -hydroxy acid or its
 α -hydroxy acid, wherein the polymer can be reacted with an
 isocyanate to form a polyurethane with good properties. Thus, a copolymer
 which can be reacted with 4,4'-diisocyanatodiphenylmethane was prepared by
 the reaction of ϵ -caprolactone 668.5, L-lactide 286.48 and
 1,4-butanediol 45.06 g for 120 min at 80° and then for 23.5 h at
 180° in the presence of stannous octoate.

IT 265114-53-2P

RL: PRP (Properties); SPN (Synthetic preparation); PREP
 (Preparation)

(copolymers of ϵ -caprolactone and **cyclic**
esters of alpha-hydroxyacids and polyurethanes derivable from
 these polymers)

RN 265114-53-2 CAPLUS

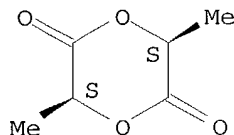
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with
 1,4-butanediol, 1,1'-methylenebis[4-isocyanatobenzene] and 2-oxepanone
 (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

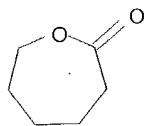
Absolute stereochemistry.



CM 2

CRN 502-44-3

CMF C6 H10 O2



CM 3

CRN 110-63-4

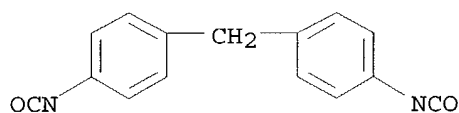
CMF C4 H10 O2

HO-(CH₂)₄-OH

CM 4

CRN 101-68-8

CMF C15 H10 N2 O2



IT 219926-38-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

(copolymers of ϵ -caprolactone and cyclic

esters of alpha-hydroxyacids and polyurethanes derivable from these polymers)

RN 219926-38-2 CAPLUS

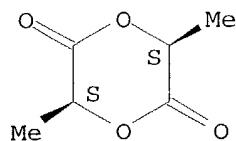
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with 1,4-butanediol and 2-oxepanone (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

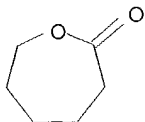
Absolute stereochemistry.



CM 2

CRN 502-44-3

CMF C6 H10 O2



CM 3

CRN 110-63-4

CMF C4 H10 O2

HO—(CH₂)₄—OH

IC ICM C08G063-06
ICS C08G063-08; C08G018-42

CC 35-5 (Chemistry of Synthetic High Polymers)

ST lactide caprolactone butanediol polyester; hydroxy acid polyurethane polyester; **cyclic ester** ring opening **polymn**

IT Polyesters, preparation
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(**Preparation**); RACT (Reactant or reagent)
(aliphatic; copolymers of ϵ -caprolactone and **cyclic esters** of alpha-hydroxyacids and polyurethanes derivable from these polymers)

IT Polyurethanes, preparation
RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(**Preparation**)
(polyester-; copolymers of ϵ -caprolactone and **cyclic esters** of alpha-hydroxyacids and polyurethanes derivable from these polymers)

IT **Polymerization**
(ring-opening; copolymers of ϵ -caprolactone and **cyclic esters** of alpha-hydroxyacids and polyurethanes derivable from these polymers)

IT **265114-53-2P**
RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(**Preparation**)
(copolymers of ϵ -caprolactone and **cyclic esters** of alpha-hydroxyacids and polyurethanes derivable from these polymers)

IT **219926-38-2P**
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(**Preparation**); RACT (Reactant or reagent)
(copolymers of ϵ -caprolactone and **cyclic esters** of alpha-hydroxyacids and polyurethanes derivable from these polymers)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 31 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:107165 CAPLUS

DOCUMENT NUMBER: 132:237430

TITLE: Synthesis of aliphatic polyesters by controlled ring-opening **polymerization** of **cyclic esters**. Characterization, properties, transesterification reactions

AUTHOR(S): Spassky, Nicolas; Simic, Vesna; Hubert-Pfalzgraf, Liliane G.; Montaudo, Maurizio S.

CORPORATE SOURCE: Laboratoire Chimie Polymeres, Univ. P. et M. Curie, Paris, Fr.

SOURCE: Macromolecular Symposia (1999), 144(Degradability, Renewability and Recycling--Key Functions for Future Materials), 257-267

CODEN: MSYMEC; ISSN: 1022-1360

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The **polymerization** of (D,L)-lactide at room temperature in solution using $Y(OCH_2CH_2OiPr)_3$ and $Ln_5(\mu-O)(OiPr)_3$ with $Ln = La, Sm, Y, Yb$ as initiators was studied. According to kinetic data, a controlled type **polymerization** is observed for most of the systems. $La \mu$ -oxoisopropoxide is the most reactive initiator, but leads to a substantial broadening of mol. weight distribution at high conversions. The nature of transesterification reactions was studied by SEC, ^{13}C NMR, and MALDI-TOF MS techniques. For Sm and Y- μ -oxo initiators only limited intermol. ester exchange occurs, while with $La \mu$ -oxo initiator and with $Y(OCH_2CH_2OiPr)_3$ initiator, but after a long time of the **polymerization** reaction, both inter and intramol. transesterification occur with formation of cyclics.

IT 26680-10-4P, Poly(D,L-lactide)

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(transesterification reactions in preparation of aliphatic polyesters by controlled ring-opening **polymerization** of **cyclic esters**)

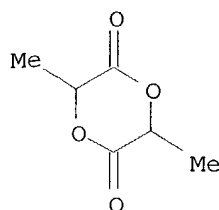
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



CC 35-3 (Chemistry of Synthetic High Polymers)
 ST lanthanide oxoisopropoxo complex transesterification **polymn**
 catalyst lactide
 IT Polyesters, preparation
 RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(Preparation)
 (aliphatic; transesterification reactions in preparation of aliphatic
 polyesters
 by controlled ring-opening **polymerization of cyclic**
esters)
 IT **Polymerization catalysts**
 Transesterification catalysts
 (transesterification reactions in preparation of aliphatic polyesters by
 controlled ring-opening **polymerization of cyclic**
esters)
 IT 118458-20-1 128214-88-0 197579-01-4 197579-02-5 261903-40-6
 RL: CAT (Catalyst use); USES (Uses)
 (transesterification reactions in preparation of aliphatic polyesters by
 controlled ring-opening **polymerization of cyclic**
esters)
 IT 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] **26680-10-4P**
 , Poly(D,L-lactide)
 RL: PRP (Properties); **SPN (Synthetic preparation); PREP**
(Preparation)
 (transesterification reactions in preparation of aliphatic polyesters by
 controlled ring-opening **polymerization of cyclic**
esters)
 REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 32 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1999:559632 CAPLUS
 DOCUMENT NUMBER: 131:258008
 TITLE: Latexes and microspheres by ring-opening
polymerization. Polymerization of
cyclic esters
 AUTHOR(S): Slomkowski, Stanislaw; Sosnowski, Stanislaw;
 Gadzinowski, Mariusz
 CORPORATE SOURCE: Center of Molecular and Macromolecular Studies, Polish
 Academy of Sciences, Lodz, 90-363, Pol.
 SOURCE: Colloids and Surfaces, A: Physicochemical and
 Engineering Aspects (1999), 153(1-3), 111-118

CODEN: CPEAEH; ISSN: 0927-7757

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Latexes and microspheres were synthesized by pseudoanionic **polymn** of lactides initiated with tin(II) 2-ethylhexanoate and pseudoanionic and anionic **polymerization** of ϵ -caprolactone initiated with $(\text{CH}_3\text{CH}_2)_2\text{AlOCH}_2\text{CH}_3$ and $(\text{CH}_3)_3\text{SiONa}$, resp. **Polymns.** were carried out in 1,4-dioxane/heptane mixts. with poly(dodecyl acrylate)-g-poly(ϵ -caprolactone) (poly(DA-CL)) added as a surfactant. Propagation was initiated in the homogeneous systems. When propagating macromols. reach their critical lengths ($M_n \approx 1000$), they precipitate, and stabilized by macromols. of poly(DA-CL) form nuclei of microspheres. The number of particles formed in the initial period of the pseudoanionic **polymerization** of L,L-lactide and ϵ -caprolactone remains constant whereas in the anionic **polymerization** of ϵ -caprolactone a weak aggregation, manifested by decreasing number of particles, was observed

Determination

of partition of monomer and active centers between continuous and condensed (particles) phases revealed that polymeric particles were highly swollen with monomer (e.g. after incubation of poly(ϵ -caprolactone) latex ($[\text{poly}(\text{CL})] = 2.17 + 101 \text{ g/l}$) in a solution containing initially $[\epsilon\text{-caprolactone}] = 7.50 + 10^{-2} \text{ mol/l}$, 28% of monomer became incorporated into polymer particles) and that shortly after the initiation period all active centers were located inside growing latex particles. High local concns. of monomer and active centers resulted in rates of **polymerization** which were up to ca 25 times higher than the rates of similar **polymerization** with the same monomer and initiator concns. averaged over the whole volume of the reaction mixts. Diams. of obtained poly(ϵ -caprolactone) latex particles were in the region from 0.6 to 0.7 μm and diams. of poly(lactide) microspheres varied from 2.2 to 4.2 μm depending on the **polymerization** conditions. Polydispersity of particle diams. was found to be strongly dependent on the ratio of mol. weight of poly(ϵ -caprolactone) grafts and mol. weight of poly(DA-CL) copolymer. The most uniform poly(L,L-lactide) microspheres ($D_v/D_{nn} < 1.05$) were obtained when the value of this parameter was close to 0.25. Polymers in poly(lactide) and poly(ϵ -caprolactone) particles were characterized by a narrow mol. weight distribution ($1.05 < M_w/M_n < 1.3$). In the case of the anionic dispersion **polymerization** of ϵ -caprolactone, the intra- and intermol. transesterification side reactions were reduced and latexes were obtained made of polymer with $M_n > 100,000$, free from the admixt. of cyclic oligomers and with $M_w/M_n = 1.06$.

IT 26680-10-4P, Lactide homopolymer 33135-50-1P, L-Lactide homopolymer

RL: SPN (Synthetic preparation); PREP (Preparation)

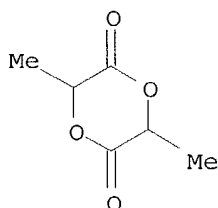
(latexes and microspheres by ring-opening **polymerization** of cyclic esters)

RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5
CMF C6 H8 O4

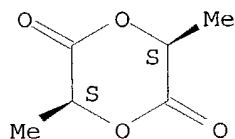


RN 33135-50-1 CAPLUS
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6
CMF C6 H8 O4

Absolute stereochemistry.



CC 35-7 (Chemistry of Synthetic High Polymers)
ST caprolactone lactide ring opening **polymn**
IT **Polymerization**
(anionic, ring-opening; latexes and microspheres by ring-opening **polymerization of cyclic esters**)
IT Polyesters, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(caprolactone-based; latexes and microspheres by ring-opening **polymerization of cyclic esters**)
IT Polyesters, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(lactide; latexes and microspheres by ring-opening **polymerization of cyclic esters**)
IT 24980-41-4P, Poly(ϵ -caprolactone) 25248-42-4P,
Poly[oxy(1-oxo-1,6-hexanediyl)] 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] 26161-42-2P, L-Lactide homopolymer, sru **26680-10-4P**
, Lactide homopolymer **33135-50-1P**, L-Lactide homopolymer
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(latexes and microspheres by ring-opening **polymerization of cyclic esters**)

IT 160950-41-4, Dodecyl acrylate- ϵ -caprolactone graft copolymer
RL: NUU (Other use, unclassified); USES (Uses)
(surfactant; latexes and microspheres by ring-opening polymerization
of cyclic esters)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 33 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1999:213628 CAPLUS

DOCUMENT NUMBER: 130:352619

TITLE: Controlled polymerization of cyclic
esters. Covalent metal alkoxides vs.
carboxylates: Sn(OC4H9)2 vs. Sn(OC(O)C7H15) (viz
Sn(Oct)2)
AUTHOR(S): Penczek, Stanislaw; Duda, Andrzej; Kowalski, Adam;
Libiszowski, Jan
CORPORATE SOURCE: Center of Molecular and Macromolecular Studies,
Department of Polymer Chemistry, Polish Academy of
Sciences, Lodz, PL-90-363, Pol.
SOURCE: Polymeric Materials Science and Engineering (1999),
80, 95-96
CODEN: PMSEDG; ISSN: 0743-0515
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Sn(OC(O)C7H15)2 (viz Sn(Oct)2) needs a coinitiator to initiate
polymerization of cyclic esters (ϵ -
caprolactone and L,L-dilactide were studied). When
[Sn(Oct)2]0/[coinitiator]0 is higher then approx. 2, then further increase
of [Sn(Oct)2]0/[coinitiator]0 ratio does not increase the rate, that
levels off. Thus, if e.g. C4H9OH is taken as a coinitiator, then first
the interconversion Sn(Oct)2 + C4H9OH = OctSnOC4H9 + OctH takes place.
Since octanoic acid (OctH) is formed, this conclusion was verified from
the "other end", namely by assuming the following interexchange:
Sn(OC4H9)2 + OctH = OctSnOnC4H9 + C4H9OH. Indeed, at certain ratios of
[Sn(Oct)2]0/[C4H9OH]0 and [Sn(OC4H9)2]0/[OctH]0 the rates of
cyclic esters polymerization are identical,
indicating that the positions of these two equilibrium are the same.

IT 33135-50-1P, L-Dilactide homopolymer
RL: SPN (Synthetic preparation); PREP (Preparation)
(controlled polymerization of cyclic esters
using tin butoxide or tin ethylhexanoate as catalyst)

RN 33135-50-1 CAPLUS

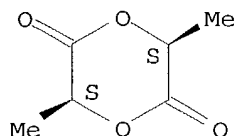
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA
INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



CC 35-3 (Chemistry of Synthetic High Polymers)
 ST tin butoxide ethylhexanoate catalyst **polymn** caprolactone
 dilactide
 IT **Polymerization** catalysts
 (controlled **polymerization** of **cyclic esters**
 using tin butoxide or tin ethylhexanoate as catalyst)
 IT Polyesters, preparation
 RL: SPN (Synthetic preparation); **PREP** (Preparation)
 (controlled **polymerization** of **cyclic esters**
 using tin butoxide or tin ethylhexanoate as catalyst)
 IT 71-36-3, 1-Butanol, uses 301-10-0, Tin bis(2-ethylhexanoate)
 26306-46-7, Dibutoxytin
 RL: CAT (Catalyst use); **USES** (Uses)
 (controlled **polymerization** of **cyclic esters**
 using tin butoxide or tin ethylhexanoate as catalyst)
 IT 24980-41-4P, ϵ -Caprolactone homopolymer 25248-42-4P,
 Poly[oxy(1-oxo-1,6-hexanediyl)] 26161-42-2P, L,L-Dilactide homopolymer,
 sru 33135-50-1P, L-Dilactide homopolymer
 RL: **SPN** (Synthetic preparation); **PREP** (Preparation)
 (controlled **polymerization** of **cyclic esters**
 using tin butoxide or tin ethylhexanoate as catalyst)
 REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 34 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1999:211333 CAPLUS
 DOCUMENT NUMBER: 130:352734
 TITLE: Titanate-catalyzed ring-opening **polymerization**
 of **cyclic** phthalate **ester**
 oligomers
 AUTHOR(S): Brunelle, Daniel J.; Serth-Guzzo, Judith
 CORPORATE SOURCE: GE Corporate Research and Development, Schenectady,
 NY, 12301, USA
 SOURCE: Polymer Preprints (American Chemical Society, Division
 of Polymer Chemistry) (1999), 40(1), 566-567
 CODEN: ACPPAY; ISSN: 0032-3934
 PUBLISHER: American Chemical Society, Division of Polymer
 Chemistry
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Ring-opening **polymerization** of cyclic butylene terephthalate oligomers
 takes place well below the m.p. of the product polymer, which crystallizes
 following **polymerization** Although the **polymerization** generates
 almost no exotherm, it is remarkably fast, reaching 50% **polymerization**

within 5 s at 190° C using 0.3 mol% titanate, ultimately providing polymer with only 1-2% cyclics remaining. During **polymerization**, the Mw increases from about 1000 to well over 100,000 in a matter of minutes, without formation of byproducts. **Polymerization** of butylene terephthalate cyclic dimer has been used as a model for probing the mechanism of titanate catalysis of transesterification reactions.

IT 224790-78-7P

RL: **SPN (Synthetic preparation); PREP (Preparation)**
(titanate-catalyzed ring-opening **polymerization** of cyclic phthalate **ester** oligomers)

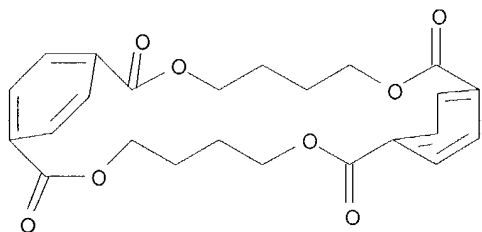
RN 224790-78-7 CAPLUS

CN 3,8,15,20-Tetraoxatricyclo[20.2.2.210,13]octacos-10,12,22,24,25,27-hexaene-2,9,14,21-tetrone, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 63440-93-7

CMF C24 H24 O8



CC 35-7 (Chemistry of Synthetic High Polymers)

ST butylene terephthalate cyclic oligomer **polymn**; titanate catalyst ring opening **polymn** butylene terephthalate

IT Polyesters, preparation

RL: **RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)**
(cyclic oligomers; titanate-catalyzed ring-opening **polymerization** of cyclic butylene terephthalate oligomers)

IT **Polymerization**

(ring-opening, mechanism of; titanate-catalyzed ring-opening **polymerization** of cyclic phthalate **ester** oligomers)

IT **Polymerization** catalysts

(ring-opening; titanate-catalyzed ring-opening **polymerization** of cyclic phthalate **ester** oligomers)

IT Group IVA element compounds

Group IVA element compounds

Group VIA element compounds

Group VIA element compounds

RL: **CAT (Catalyst use); USES (Uses)**

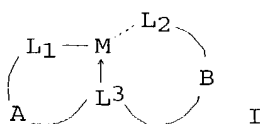
(stannoxanes, tin derivs.; titanate-catalyzed ring-opening **polymerization** of cyclic phthalate **ester**)

oligomers)
 IT 24968-12-5P 59822-52-5P, 1,4-Butanediol-terephthaloyl chloride copolymer
 RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
 (**Preparation**); RACT (Reactant or reagent)
 (cyclic oligomers; titanate-catalyzed ring-opening **polymerization** of
 cyclic butylene terephthalate oligomers)
 IT 546-68-9 1070-10-6, Tetrakis(2-ethylhexyl) titanate 5593-70-4,
 Titanium(IV) butoxide
 RL: CAT (Catalyst use); USES (Uses)
 (titanate-catalyzed ring-opening **polymerization** of cyclic
 phthalate **ester** oligomers)
 IT 63440-93-7P
 RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
 (**Preparation**); RACT (Reactant or reagent)
 (titanate-catalyzed ring-opening **polymerization** of cyclic
 phthalate **ester** oligomers)
 IT 224790-78-7P
 RL: **SPN (Synthetic preparation); PREP (Preparation)**
 (titanate-catalyzed ring-opening **polymerization** of cyclic
 phthalate **ester** oligomers)
 REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 35 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1999:64812 CAPLUS
 DOCUMENT NUMBER: 130:139768
 TITLE: Metal complexes with a tridentate ligand, their
 preparation and use as **polymerization**
 catalysts
 INVENTOR(S): Bertrand, Guy; Cazaux, Jean-Bernard; Faure, Jean-Luc;
 Nguyen, Hanh; Reau, Regis
 PATENT ASSIGNEE(S): Societe de Conseils de Recherches et d'Applications
 Scientifiques (S.C.R.A.S.), Fr.; Centre National de la
 Recherche Scientifique (CNRS)
 SOURCE: PCT Int. Appl., 24 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: French
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| WO 9902536 | A1 | 19990121 | WO 1998-FR1433 | 19980706 |
| W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG | | | | |

| | | | | |
|---|----|-------------------|----------------|------------|
| AU 9885442 | A1 | 19990208 | AU 1998-85442 | 19980706 |
| EP 998478 | A1 | 20000510 | EP 1998-936450 | 19980706 |
| EP 998478 | B1 | 20021009 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI | | | | |
| AT 225795 | E | 20021015 | AT 1998-936450 | 19980706 |
| RU 2197494 | C2 | 20030127 | RU 2000-102898 | 19980706 |
| US 6303807 | B1 | 20011016 | US 1999-446793 | 19991223 |
| NO 2000000049 | A | 20000106 | NO 2000-49 | 20000106 |
| PRIORITY APPLN. INFO.: | | | EP 1997-401621 | A 19970708 |
| | | | WO 1998-FR1433 | W 19980706 |
| OTHER SOURCE(S): | | MARPAT 130:139768 | | |
| GI | | | | |



AB Compds. consisting of an element of Group 11, 12, or 14 and a tridentate ligand are useful as **polymerization** catalysts, especially for **cyclic esters** or epoxides. Thus, mixing 4.7 mmol of the di-Li salt of (Me₃SiNHCH₂CH₂)₂NMe in 20 mL Et₂O with 4.7 mmol SnCl₂ at -78°, allowing the mixture to warm to room temperature, and stirring at room temperature for 2

h gave the 1:1 complex (I) in 80% yield. Heating 6.67 g DL-lactide in 70 mL toluene with 0.08 g I at 75° for 2.5 h gave 60% of a polymer with Mw 62,500 and Mw/Mn 1.43.

IT **26680-10-4P**, Poly-DL-lactide **26780-50-7P**, Glycolide-DL-lactide copolymer **107131-72-6P**, Glycolide-DL-lactide block copolymer

RL: **IMF (Industrial manufacture); PREP (Preparation)**
(metal complexes with a tridentate ligand as **polymerization** catalysts)

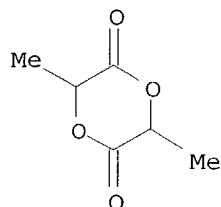
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



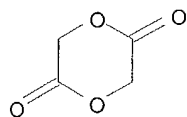
RN 26780-50-7 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 1,4-dioxane-2,5-dione
(9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6

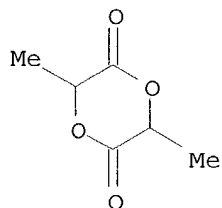
CMF C4 H4 O4



CM 2

CRN 95-96-5

CMF C6 H8 O4



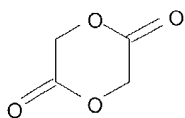
RN 107131-72-6 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 1,4-dioxane-2,5-dione,
block (9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6

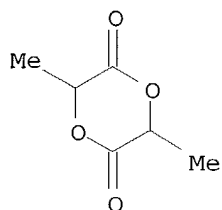
CMF C4 H4 O4



CM 2

CRN 95-96-5

CMF C6 H8 O4



IC ICM C07F007-22
ICS C08F004-16; C07F003-06; C07F007-10
CC 35-3 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 67
ST tin triamine complex **polymn** catalyst; **cyclic ester polymn** complex catalyst
IT Polyesters, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(aliphatic; metal complexes with a tridentate ligand as **polymerization** catalysts)
IT **Polymerizats** catalysts
(metal complexes with a tridentate ligand as **polymerization** catalysts)
IT Epoxides
RL: RCT (Reactant); RACT (Reactant or reagent)
(metal complexes with a tridentate ligand as **polymerization** catalysts for)
IT 219825-26-0P 220028-26-2P
RL: CAT (Catalyst use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(metal complexes with a tridentate ligand as **polymerization** catalysts)
IT 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] **26680-10-4P**, Poly-DL-lactide **26780-50-7P**, Glycolide-DL-lactide copolymer **107131-72-6P**, Glycolide-DL-lactide block copolymer
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(metal complexes with a tridentate ligand as **polymerization** catalysts)
IT 219825-25-9P
RL: SPN (Synthetic preparation); **PREP (Preparation)**

(metal complexes with a tridentate ligand as **polymerization**
catalysts)
IT 75-56-9, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(metal complexes with a tridentate ligand as **polymerization**
catalysts for)
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 36 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1998:648293 CAPLUS

DOCUMENT NUMBER: 129:343788

TITLE: Direct synthesis of polyester microspheres, potential
carriers of bioactive compounds

AUTHOR(S): Slomkowski, S.; Sosnowski, S.; Gadzinowski, M.;
Pichot, C.; Elaissari, A.

CORPORATE SOURCE: Center of Molecular and Macromolecular Studies, Polish
Academy of Science, Lodz, 90-363, Pol.

SOURCE: ACS Symposium Series (1998), 709(Tailored Polymeric
Materials for Controlled Delivery Systems), 143-153
CODEN: ACSMC8; ISSN: 0097-6156

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Polyester microspheres, composed of poly(ϵ -caprolactone) and
polylactides, were obtained directly by pseudoionic and/or ionic
dispersion **polymns.** of parent **cyclic esters**
carried out in 1,4-dioxane/heptane mixed solvent. Particles with narrow
diameter polydispersity ($D_w/D_n < 1.1$) were synthesized by using
poly(dodecyl acrylate)-g-poly(ϵ -caprolactone) (poly(DA-CL)), with
ratio of $M_n(\text{poly}(\epsilon\text{-caprolactone}))/M_n(\text{poly(DA-CL)}) \approx 0.25$,
as a surfactant. Poly(L,L-lactide) microspheres were obtained as an
amorphous or crystalline material, depending on particle treatment after
synthesis. Described is an application of ^{13}C -NMR MAS spectroscopy for
determination of the degree of crystallinity of these products. Pseudoanionic
dispersion **polymerization** of L,L-lactide carried out in the presence of
omeprazole (5-methoxy-2-[[[4-methoxy-3,5-dimethyl-2-pyridyl]-methyl]-
sulfinyl]-1H-benzimidazole), inhibitor of gastric acid secretion, yielded
microspheres with 11 wt% of drug. A method was developed which allows
transfer of poly(ϵ -caprolactone) and polylactide microspheres from
heptane to the water based media in which microspheres form suspensions of
nonaggregated particles. This process consists of controlled basic
hydrolysis of microspheres transferred from heptane to ethanol containing
Triton X-405, followed by transferring them to buffered solns. with
content of Triton X-405 as low as 0.2 wt%.

IT 33135-50-1P, Poly(L-Lactide)

RL: BUU (Biological use, unclassified); PRP (Properties); SPN
(**Synthetic preparation**); BIOL (Biological study); PREP
(**Preparation**); USES (Uses)

(microspheres; polyester microsphere preparation and characterization as
bioactive compound carriers)

RN 33135-50-1 CAPLUS

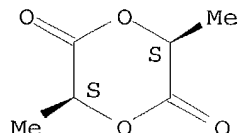
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



CC 35-7 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 38, 63

ST polycaprolactone microsphere dispersion ionic **polymn** synthesis;
 polylactide microsphere dispersion pseudoanionic **polymn**
 synthesis; omeprazole carrier polylactide microsphere prepn
 characterization

IT Drug delivery systems
 (microspheres; polyester microsphere preparation and characterization as
 bioactive compound carriers)

IT Crystallinity
 (of poly(L-lactide) microspheres)

IT Polyesters, preparation
 RL: BUU (Biological use, unclassified); SPN (Synthetic preparation); BIOL
 (Biological study); **PREP (Preparation)**; USES (Uses)
 (polyester microsphere preparation and characterization as bioactive
 compound carriers)

IT Surfactants
 (ε-caprolactone-dodecyl acrylate graft copolymer; polyester
 microsphere preparation by dispersion **polymerization** in the presence of)

IT **33135-50-1P**, Poly(L-Lactide)
 RL: BUU (Biological use, unclassified); PRP (Properties); **SPN**
(Synthetic preparation); BIOL (Biological study); **PREP**
(Preparation); USES (Uses)
 (microspheres; polyester microsphere preparation and characterization as
 bioactive compound carriers)

IT 26161-42-2P
 RL: BUU (Biological use, unclassified); SPN (Synthetic preparation); BIOL
 (Biological study); **PREP (Preparation)**; USES (Uses)
 (microspheres; polyester microsphere preparation and characterization as
 bioactive compound carriers)

IT 73590-58-6, Omeprazole
 RL: MSC (Miscellaneous)
 (poly(L-lactide) microsphere preparation and characterization as bioactive
 compound carriers for)

IT 160950-41-4, ϵ -Caprolactone-Dodecyl acrylate graft copolymer
 RL: NUU (Other use, unclassified); USES (Uses)
 (surfactant; polyester microsphere preparation by dispersion **polymn**
 . in the presence of)

REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 37 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1998:410718 CAPLUS
 DOCUMENT NUMBER: 129:95861
 TITLE: Polycarbonate copolyester diols their preparation and
 use
 INVENTOR(S): Greco, Alberto
 PATENT ASSIGNEE(S): Enichem S.P.A., Italy
 SOURCE: Eur. Pat. Appl., 24 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| EP 849303 | A2 | 19980624 | EP 1997-119779 | 19971112 |
| EP 849303 | A3 | 19980812 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI | | | | |
| US 5929193 | A | 19990727 | US 1997-974917 | 19971120 |
| JP 11001549 | A2 | 19990106 | JP 1997-351784 | 19971219 |
| PRIORITY APPLN. INFO.: | | | IT 1996-MI2662 | 19961219 |

AB Polycarbonate co-polyester diols with a mol. weight 1000-6000, the
 polycarbonate or polyether polycarbonate diol units represent 30-70%, are
 prepared by reaction of **cyclic esters**, glycolide or
 lactide with polycarbonate or polyethercarbonate diols at 100-180°
 for 2-10 h. Thus, liquid diethylene glycol-dimethyl carbonate- ϵ -
 caprolactone copolymer (I) had glass transition temperature (Tg) -50°.
 The butanediol-I-MDI thermoplastic elastomer (NCO index 1.03) had Tg
 -32.7, gas oil absorption 2.8%, and tensile strength retention
 (120°) 74%.

IT **209729-46-4P**, Diethylene glycol-dimethyl carbonate-L-lactide block
 copolymer
 RL: **IMF (Industrial manufacture)**; RCT (Reactant); **PREP**
(Preparation); RACT (Reactant or reagent)
 (polycarbonate copolyester diols preparation and use for polyurethane
 elastomers having heat and oil resistance and good mech. properties)

RN 209729-46-4 CAPLUS

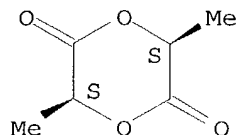
CN Carbonic acid, dimethyl ester, polymer with (3S-cis)-3,6-dimethyl-1,4-
 dioxane-2,5-dione and 2,2'-oxybis[ethanol], block (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

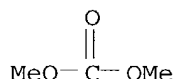
Absolute stereochemistry.



CM 2

CRN 616-38-6

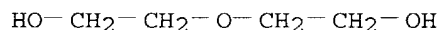
CMF C3 H6 O3



CM 3

CRN 111-46-6

CMF C4 H10 O3



IC ICM C08G063-64

ICS C08G018-44

CC 35-5 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 38, 39

ST polyether polycarbonate polyester block manuf; **cyclic ester polymn** polycarbonate diol

IT **Polymerization**

(polycarbonate copolyester diols preparation and use for polyurethane elastomers having heat and oil resistance and good mech. properties)

IT Polyesters, preparation

Polyesters, preparation

RL: IMF (Industrial manufacture); **PREP (Preparation)**

(polycarbonate-, block; polycarbonate copolyester diols preparation and use for polyurethane elastomers having heat and oil resistance and good mech. properties)

IT Polyethers, preparation

Polyethers, preparation

Polyethers, preparation

RL: IMF (Industrial manufacture); **PREP (Preparation)**

- (polycarbonate-polyester-, block; polycarbonate copolyester diols preparation and use for polyurethane elastomers having heat and oil resistance and good mech. properties)
- IT Urethane rubber, preparation
Urethane rubber, preparation
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(polycarbonate-polyester-, block; polycarbonate copolyester diols preparation and use for polyurethane elastomers having heat and oil resistance and good mech. properties)
- IT Urethane rubber, preparation
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(polycarbonate-polyester-polyether-, block; polycarbonate copolyester diols preparation and use for polyurethane elastomers having heat and oil resistance and good mech. properties)
- IT Synthetic rubber, preparation
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(polycarbonate-polyester-polyether-polyurethane, block; polycarbonate copolyester diols preparation and use for polyurethane elastomers having heat and oil resistance and good mech. properties)
- IT Synthetic rubber, preparation
Synthetic rubber, preparation
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(polycarbonate-polyester-polyurethane, block; polycarbonate copolyester diols preparation and use for polyurethane elastomers having heat and oil resistance and good mech. properties)
- IT Polyesters, preparation
Polyesters, preparation
Polyesters, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(polycarbonate-polyether-, block; polycarbonate copolyester diols preparation and use for polyurethane elastomers having heat and oil resistance and good mech. properties)
- IT Polycarbonates, preparation
Polycarbonates, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(polyester-, block; polycarbonate copolyester diols preparation and use for polyurethane elastomers having heat and oil resistance and good mech. properties)
- IT Polycarbonates, preparation
Polycarbonates, preparation
Polycarbonates, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(polyester-polyether-, block; polycarbonate copolyester diols preparation and use for polyurethane elastomers having heat and oil resistance and good mech. properties)
- IT 209729-41-9P, Diethylene glycol-dimethyl carbonate- ϵ -caprolactone block copolymer 209729-42-0P, 1,4-Butanediol-dimethyl carbonate- ϵ -caprolactone block copolymer 209729-43-1P, Dimethyl

carbonate-1,6-hexanediol-ε-caprolactone block copolymer
 209729-44-2P, Diethylene glycol-dimethyl carbonate-ε-caprolactone-
 tripropylene glycol block copolymer 209729-45-3P, Diethylene
 glycol-dimethyl carbonate-δ-valerolactone block copolymer
209729-46-4P, Diethylene glycol-dimethyl carbonate-L-lactide block
 copolymer 209729-48-6P, Dimethyl carbonate-ε-caprolactone-1,6-
 hexanediol-norbornene dimethanol block copolymer

RL: IMF (Industrial manufacture); RCT (Reactant); PREP
 (Preparation); RACT (Reactant or reagent)

(polycarbonate copolyester diols preparation and use for polyurethane
 elastomers having heat and oil resistance and good mech. properties)

IT 209729-49-7P, 1,4-Butanediol-diethylene glycol-dimethyl
 carbonate-ε-caprolactone-MDI block copolymer 209729-50-0P,
 1,4-Butanediol-dimethyl carbonate-ε-caprolactone-MDI block
 copolymer 209729-51-1P, 1,4-Butanediol-dimethyl carbonate-1,6-hexanediol-
 ε-caprolactone-MDI block copolymer 209729-52-2P,
 1,4-Butanediol-diethylene glycol-dimethyl carbonate-ε-caprolactone-
 MDI-tripropylene glycol block copolymer 209729-53-3P,
 1,4-Butanediol-diethylene glycol-dimethyl carbonate-MDI-δ-
 valerolactone block copolymer

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
 engineered material use); PREP (Preparation); USES (Uses)

(rubber; polycarbonate copolyester diols preparation and use for
 polyurethane elastomers having heat and oil resistance and good mech.
 properties)

L32 ANSWER 38 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1998:392367 CAPLUS

DOCUMENT NUMBER: 129:109453

TITLE: Method for preparation of aliphatic polyesters

INVENTOR(S): Okano, Yoshimichi; Sakane, Masanori

PATENT ASSIGNEE(S): Daicel Chemical Industries, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| ----- | ---- | ----- | ----- | ----- |
| JP 10158371 | A2 | 19980616 | JP 1996-336359 | 19961202 |
| PRIORITY APPLN. INFO.: | | | JP 1996-336359 | 19961202 |

AB The polymers, having good hydrolysis resistance and color tone, are prepared
 by ring-opening **polymerization of cyclic esters**
 having a water content of ≤80 ppm, and an acid value of
 ≤0.10 mg KOH/g. Thus, heating lactide (prepared by decomposition of
 L-lactic acid oligomer, water content 32 ppm, acid value 0.01 mg KOH/g) in
 the presence of 1,4-butanediol and butyltin tris(2-ethylhexanoate) in
 o-C6H4Cl2 at 180° gave 89.8% of a polymer with Mn 97,500, and acid
 value 0.21 mg KOH/g.

IT **33135-50-1P**, L-Lactide homopolymer

RL: IMF (Industrial manufacture); PRP (Properties); PREP
(Preparation)

(preparation of aliphatic polyesters with good hydrolysis resistance and
color
tone)

RN 33135-50-1 CAPLUS

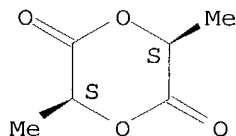
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA
INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



IC ICM C08G063-08

ICS C08G063-78; C08G063-82

CC 35-7 (Chemistry of Synthetic High Polymers)

ST **cyclic ester** ring opening **polymn**; lactide
ring opening **polymn**; caprolactone ring opening **polymn**

IT Polyesters, preparation

RL: IMF (Industrial manufacture); PRP (Properties); PREP
(Preparation)

(aliphatic; preparation of aliphatic polyesters with good hydrolysis
resistance
and color tone)

IT Biodegradable materials

(preparation of aliphatic polyesters with good hydrolysis resistance and
color
tone)

IT 23850-94-4, Butyltin tris(2-ethylhexanoate)

RL: CAT (Catalyst use); USES (Uses)

(preparation of aliphatic polyesters with good hydrolysis resistance and
color
tone)

IT 24980-41-4P, Polycaprolactone 33135-50-1P, L-Lactide homopolymer

50974-93-1P 59692-54-5P 114572-03-1P

RL: IMF (Industrial manufacture); PRP (Properties); PREP
(Preparation)

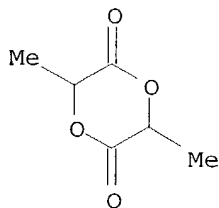
(preparation of aliphatic polyesters with good hydrolysis resistance and
color
tone)

L32 ANSWER 39 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1998:221289 CAPLUS
 DOCUMENT NUMBER: 128:270889
 TITLE: Stereochemical aspects of the controlled ring-opening
 polymerization of chiral cyclic
 esters
 AUTHOR(S): Spassky, Nicolas; Pluta, Christian; Simic, Vesna;
 Thiam, Mohamedou; Wisniewski, Muriel
 CORPORATE SOURCE: Laboratoire Chimie Macromoleculaire, Universite Pierre
 et Marie Curie, Paris, F-75252, Fr.
 SOURCE: Macromolecular Symposia (1998), 128(International
 Symposium on New Approaches in Polymer Synthesis and
 Macromolecular Formation, 1997), 39-51
 CODEN: MSYMEC; ISSN: 1022-1360
 PUBLISHER: Huethig & Wepf Verlag
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: English
 AB A review with 55 refs. discussing stereochem. aspects of controlled
 polymerization of lactide and β -butyrolactone. The physicochem. and
 thermal properties of these polymers are shown to be depending on the
 stereochem. structure of the macromol. chain. Different types of
 processes involving change of enantiomeric composition in the course of the
 polymerization reaction are examined in function of different initiators
 used. The formation of stereocomplexes from stereocopolymers of various
 enantiomeric compns. is reported.
 IT 26680-10-4P, Polylactide
 RL: PRP (Properties); SPN (Synthetic preparation); PREP
 (Preparation)
 (stereochem.in controlled ring-opening **polymerization** of chiral
 cyclic esters)
 RN 26680-10-4 CAPLUS
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

 CM 1

 CRN 95-96-5
 CMF C6 H8 O4



CC 35-0 (Chemistry of Synthetic High Polymers)
 ST review **polymn** lactide lactone stereochem
 IT Polyesters, preparation
 RL: PRP (Properties); SPN (Synthetic preparation); PREP
 (Preparation)

(stereochem.in controlled ring-opening **polymerization** of chiral
cyclic esters)

IT Lactones
RL: RCT (Reactant); RACT (Reactant or reagent)
(stereochem.in controlled ring-opening **polymerization** of chiral
cyclic esters)

IT 96-48-ODP, Butyrolactone, derivs. polymers 26023-30-3P,
Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] 26680-10-4P,
Polylactide
RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)
(stereochem.in controlled ring-opening **polymerization** of chiral
cyclic esters)

L32 ANSWER 40 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1998:133140 CAPLUS
DOCUMENT NUMBER: 128:167785
TITLE: A novel rare earth coordination catalyst for
polymerization of biodegradable aliphatic
lactones and lactides
AUTHOR(S): Zhang, Jie; Gan, Zhihua; Zhong, Zhiyuan; Jing, Xiabin
CORPORATE SOURCE: College of Science, Jilin University of Technology,
Changchun, 130025, Peop. Rep. China
SOURCE: Polymer International (1998), 45(1), 60-66
CODEN: PLYIEI; ISSN: 0959-8103
PUBLISHER: John Wiley & Sons Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A novel rare earth coordination system composed of lanthanide
trifluoroacetates $\text{Ln}(\text{CF}_3\text{COO})_3$ ($\text{Ln} = \text{Y}, \text{Yb}, \text{Nd}, \text{Tm}, \text{Ho}, \text{La}, \text{Pr}$) and
triisobutylaluminium $\text{Al}(\text{i-Bu})_3$ was used as catalyst for the **polymn**
. of ϵ -caprolactone (CL), D,L-lactide (DLLA) and their copolymn.
The influence of temperature, time and catalyst concentration on **polymerization**
yields and mol. wts. of the polyesters have been studied. The
ring-opening **polymerization** of **cyclic esters**
catalyzed by $\text{Ln}(\text{CF}_3\text{COO})_3/\text{Al}(\text{i-Bu})_3$ has some living character and the mol.
weight of the polyester could be controlled by adjusting the molar ratio of
monomer to catalyst. The DLLA/CL copolymer was synthesized by sequential
addition of monomers and the structure of the copolyester was characterized
by GPC, NMR and DSC.

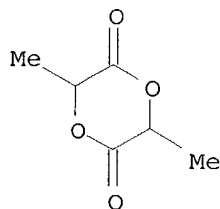
IT 26680-10-4P, D,L-Lactide homopolymer 70524-20-8P,
 ϵ -Caprolactone-D,L-lactide copolymer
RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)
(novel rare earth coordination catalyst for **polymerization** of
biodegradable aliphatic lactones and lactides)

RN 26680-10-4 CAPLUS
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



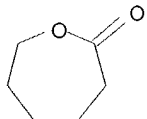
RN 70524-20-8 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 2-oxepanone (9CI) (CA INDEX NAME)

CM 1

CRN 502-44-3

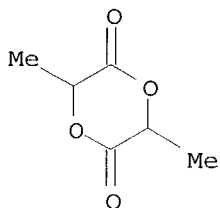
CMF C6 H10 O2



CM 2

CRN 95-96-5

CMF C6 H8 O4



CC 35-7 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67

ST lanthanide trifluoroacetate catalyst caprolactone lactide **polymn**
; triisobutylaluminium lanthanide trifluoroacetate **polymn**
catalyst; biodegradable polyester caprolactone lactide **polymn**
catalyst; rare earth coordination catalyst lactide **polymn**; ring
opening **polymn** caprolactone lactide polyester

IT Polymers, preparation

RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(Preparation)
 (biodegradable; novel rare earth coordination catalyst for
polymerization of biodegradable aliphatic lactones and lactides)

IT Polyesters, preparation
 RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(Preparation)
 (novel rare earth coordination catalyst for **polymerization** of
 biodegradable aliphatic lactones and lactides)

IT Molecular weight
 (of biodegradable aliphatic lactones and lactide polymers)

IT **Polymerization**
Polymerization catalysts
 (ring-opening; novel rare earth coordination catalyst for
polymerization of biodegradable aliphatic lactones and lactides)

IT 24980-41-4P, ϵ -Caprolactone homopolymer 25248-42-4P,
 ϵ -Caprolactone homopolymer, sru 26023-30-3P, D,L-Lactide
 homopolymer, sru 26680-10-4P, D,L-Lactide homopolymer
 70524-20-8P, ϵ -Caprolactone-D,L-lactide copolymer
 RL: PRP (Properties); SPN (Synthetic preparation); **PREP**
(Preparation)
 (novel rare earth coordination catalyst for **polymerization** of
 biodegradable aliphatic lactones and lactides)

IT 100-99-2, uses
 RL: CAT (Catalyst use); USES (Uses)
 (with lanthanide; novel rare earth coordination catalyst for
polymerization of biodegradable aliphatic lactones and lactides)

IT 29770-44-3, Neodymium trifluoroacetate 37737-28-3, Yttrium
 trifluoroacetate 70236-92-9, Lanthanum trifluoroacetate 70236-94-1,
 Praseodymium trifluoroacetate 70236-98-5, Holmium trifluoroacetate
 70237-00-2, Thulium trifluoroacetate 87863-62-5, Ytterbium
 trifluoroacetate
 RL: CAT (Catalyst use); USES (Uses)
 (with triisobutylaluminium; novel rare earth coordination catalyst for
polymerization of biodegradable aliphatic lactones and lactides)

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 41 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1997:746051 CAPLUS
 DOCUMENT NUMBER: 127:359233
 TITLE: Preparation of Group IIIA complexes containing one
 mono- or di-anionic tridentate ligand and their use as
polymerization catalysts

INVENTOR(S): Bertrand, Guy; Cazaux, Jean-Bernard; Emig, Norbert;
 Reau, Regis

PATENT ASSIGNEE(S): Societe De Conseils De Recherches Et D'applications
 Scientifiques (S.C.R.A.S, Fr.; Centre National De La
 Recherche Scientifique (C.N.R.S)

SOURCE: PCT Int. Appl., 26 pp.
 CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|------------|
| WO 9742197 | A1 | 19971113 | WO 1997-FR773 | 19970430 |
| W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG | | | | |
| AU 9727801 | A1 | 19971126 | AU 1997-27801 | 19970430 |
| AU 724206 | B2 | 20000914 | | |
| CN 1220669 | A | 19990623 | CN 1997-195140 | 19970430 |
| CN 1091110 | B | 20020918 | | |
| BR 9708967 | A | 19990803 | BR 1997-8967 | 19970430 |
| JP 2000509706 | T2 | 20000802 | JP 1997-539583 | 19970430 |
| EP 1027357 | A1 | 20000816 | EP 1997-921914 | 19970430 |
| EP 1027357 | B1 | 20020403 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI | | | | |
| RU 2180664 | C2 | 20020320 | RU 1998-121685 | 19970430 |
| AT 215543 | E | 20020415 | AT 1997-921914 | 19970430 |
| IL 126682 | A1 | 20020725 | IL 1997-126682 | 19970430 |
| PT 1027357 | T | 20020731 | PT 1997-921914 | 19970430 |
| ES 2174254 | T3 | 20021101 | ES 1997-921914 | 19970430 |
| US 6281154 | B1 | 20010828 | US 1998-171940 | 19981028 |
| NO 9805061 | A | 19981229 | NO 1998-5061 | 19981030 |
| KR 2000010703 | A | 20000225 | KR 1998-708789 | 19981031 |
| PRIORITY APPLN. INFO.: | | | EP 1996-400938 | A 19960502 |
| | | | WO 1997-FR773 | W 19970430 |

OTHER SOURCE(S): MARPAT 127:359233

AB The invention discloses [RM(L1AL3BL2)] and [RMM(R1L1AL3BL2)]+[X1]- (M = Group IIIA element; RM = H, halogen, alkyl, cycloalkyl, aryl, alkoxy, cycloalkoxy, aryloxy, alkylthio, cycloalkylthio, arylthio; A/B = C2-4 chain; L1/L2/L3 = -E15(R15)- in which E15 = Group VA element, R15 = H, alkyl, cycloalkyl, aryl, RR'R'E14 (E14 = Group IVA element; R/R'/R'' = H, alkyl, cycloalkyl, aryl, alkoxy, cycloalkoxy, aryloxy, alkylthio, cycloalkylthio, arylthio), SO2R'15 (R'15 = halogen, alkyl, haloalkyl, aryl); X1 = anion not coordinated to M; R1 = H, RR'R'E14, alkyl, cycloalkyl, aryl), a method of their preparation, and their use as (co) **polymerization** catalysts. The preparation involves reaction of Y2(L1AL3BL2) (Y = organometallic group, metal, H) with RMMZ1Z2 (Z1/Z2 = leaving groups) to give [RM(L1AL3BL2)], which can be reacted with R1X1 to give [RMM(R1L1AL3BL2)]+[X1]-. [RMMX(R1L1AL3BL2)] (X = coordinated anion) can be further reacted with MX'3 (X' = halogen, alkyl, alkoxy) to give [RMM(R1L1AL3BL2)]+[X1]-. For example, [(Me3SiNCH2CH2)2NSiMe3]AlCl1 was prepared from 9.6 mmol Li2[(Me3SiNCH2CH2)2NSiMe3] and 10 mmol AlCl3 in THF;

0.5 mmol $[(\text{Me}_3\text{SiNCH}_2\text{CH}_2)_2\text{NSiMe}_3]\text{AlCl}$ reacts with 1 mmol HCl in Et₂O/toluene followed by 0.67 mmol AlCl₃ to give $[(\text{Me}_3\text{SiNCH}_2\text{CH}_2)(\text{Me}_3\text{SiNHCH}_2\text{CH}_2)\text{NSiMe}_3]\text{AlCl}[\text{AlCl}_4]$. The crystal and mol. structures of $[(\text{Me}_3\text{SiNCH}_2\text{CH}_2)_2\text{NSiMe}_3]\text{AlCl}$, $[(\text{Me}_3\text{SiNCH}_2\text{CH}_2)_2\text{NMe}]\text{AlCl}$, $[(\text{Me}_3\text{SiNCH}_2\text{CH}_2)_2\text{NMe}]\text{AlH}$, $[(\text{Me}_3\text{SiNCH}_2\text{CH}_2)_2\text{NMe}]\text{AlMe}$, $[(\text{iPrNCH}_2\text{CH}_2)(\text{iPrNHCH}_2\text{CH}_2)\text{NMe}]\text{AlCl}[\text{AlCl}_4]$, and $[(\text{Me}_3\text{SiNCH}_2\text{CH}_2)(\text{Me}_3\text{SiNHCH}_2\text{CH}_2)\text{NSiMe}_3]\text{AlCl}[\text{AlCl}_4]$ were determined by x-ray crystallog. The catalytic effectiveness of the above complexes was shown for **polymerization** of propene oxide, DL-lactide and mixts. DL-lactide and glycolide.

IT 26680-10-4P, Poly(DL-lactide) 26780-50-7P,

Glycolide-DL-lactide copolymer

RL: IMF (Industrial manufacture); PREP (Preparation)

(preparation of Group IIIA complexes containing one mono- or di-anionic tridentate ligand and use as **polymerization** catalysts)

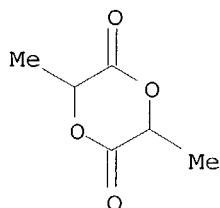
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



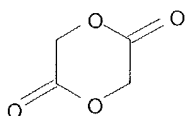
RN 26780-50-7 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 1,4-dioxane-2,5-dione (9CI) (CA INDEX NAME)

CM 1

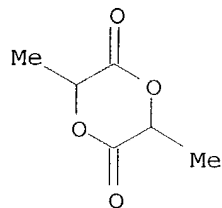
CRN 502-97-6

CMF C4 H4 O4



CM 2

CRN 95-96-5
CMF C6 H8 O4



- IC ICM C07F007-10
ICS C07F005-00; C07F005-06; C08F010-00
- CC 35-3 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 29, 67, 75, 78
- ST crystal structure aluminum triamine anion complex; mol structure aluminum triamine anion complex; epoxide **polymn** catalyst aluminum triamine anion; **cyclic ester polymn** catalyst aluminum triamine; **polymn** catalyst aluminum triamine anion complex; aluminum triamine anion complex prepn catalysis
- IT Crystal structure
Molecular structure
(of aluminum complexes with triamine mono- and dianions)
- IT Group IIIA element complexes
RL: CAT (Catalyst use); SPN (Synthetic preparation); **PREP (Preparation)**; USES (Uses)
(preparation of Group IIIA complexes containing one mono- or di-anionic tridentate ligand and use as **polymerization** catalysts)
- IT Polyesters, preparation
Polyoxyalkylenes, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(preparation of Group IIIA complexes containing one mono- or di-anionic tridentate ligand and use as **polymerization** catalysts)
- IT **Polymerization** catalysts
(ring-opening; preparation of Group IIIA complexes containing one mono- or di-anionic tridentate ligand and use as **polymerization** catalysts)
- IT 198571-92-5P 198571-94-7P 198571-96-9P
RL: PRP (Properties); SPN (Synthetic preparation); **PREP (Preparation)**
(preparation and crystal structure of)
- IT 198571-95-8P
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of)
- IT 25322-69-4P, Polypropylene glycol 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] **26680-10-4P**, Poly(DL-lactide) **26780-50-7P**, Glycolide-DL-lactide copolymer
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(preparation of Group IIIA complexes containing one mono- or di-anionic tridentate ligand and use as **polymerization** catalysts)
- IT 198571-93-6P

RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
 (preparation, crystal structure and catalysis of **polymerization of cyclic esters**)

IT 177854-55-6P

RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
 (preparation, crystal structure and catalysis of **polymerization of propylene oxide**)

IT 177854-52-3P

RL: CAT (Catalyst use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent);
 USES (Uses)
 (preparation, crystal structure, reaction with hydrochloric acid and catalysis of **polymerization of propylene oxide**)

IT 160788-45-4

RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with aluminum chloride)

IT 198571-98-1

RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with hydrochloric acid)

IT 75-24-1, Trimethylaluminum 16853-85-3, Lithium aluminum hydride

RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with methylbis(((trimethylsilyl)amino)ethyl)amine)

IT 198571-97-0, Methylbis(2-(((trimethylsilyl)amino)ethyl)amine

RL: RCT (Reactant); RACT (Reactant or reagent)
 (reactions with lithium aluminum hydride and trimethylaluminum)

L32 ANSWER 42 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1997:739380 CAPLUS

DOCUMENT NUMBER: 128:3996

TITLE: **Cyclic ester** preparation and
 purification by aqueous solvent extraction for
 preparation of high molecular weight polymers

INVENTOR(S): Miao, Fudu; Eggeman, Timothy J.

PATENT ASSIGNEE(S): Chronopol, Inc., USA

SOURCE: U.S., 18 pp., Cont.-in-part of U.S. Ser. No. 417,597.
 CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 17

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|----------|-----------------|----------|
| US 5686630 | A | 19971111 | US 1995-473400 | 19950606 |
| US 5420304 | A | 19950530 | US 1993-128797 | 19930929 |
| US 5675021 | A | 19971007 | US 1995-417597 | 19950405 |
| WO 9631494 | A1 | 19961010 | WO 1996-US4464 | 19960401 |

W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE,
 ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT,
 LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE,

SG, SI

RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR,
IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML

AU 9653824 A1 19961023 AU 1996-53824 19960401

EP 836598 A1 19980422 EP 1996-910701 19960401

R: BE, DE, ES, FR, GB, NL

CN 1186490 A 19980701 CN 1996-194422 19960401

JP 11503162 T2 19990323 JP 1996-530411 19960401

BR 9604801 A 19991130 BR 1996-4801 19960401

US 5856523 A 19990105 US 1997-940592 19970930

PRIORITY APPLN. INFO.:

US 1993-128797 A2 19930929

US 1995-417597 A2 19950405

US 1992-854559 A2 19920319

US 1995-473400 A 19950606

WO 1996-US4464 W 19960401

WO 1996-US4465 W 19960401

AB **Cyclic esters** for use in preparation of high-mol.-weight polymers are purified by introducing an aqueous solvent into a **cyclic ester**-containing composition and allowing two phases to form. The first phase includes **cyclic esters** and any organic solvent, and the second phase includes the aqueous solvent and impurities. Thus, crude tetra-Me glycolide, prepared from 2-hydroxy-2-methylpropionic acid, was refluxed to remove water, washed with Na₂CO₃, neutralized, dissolved in acetone, and passed through a column containing Amberlyst A 21 ion-exchange resin, dried, and recrystd. The purified tetra-Me glycolide was **polymerized** using lithium tert-butoxide catalyst for .apprx.8 h at .apprx.130°, giving a polymer having Mw 520,000 and Mn 354,000, compared with Mw 17,200 and Mn 14,525 using a non-ion-exchanged monomer.

IT **32474-74-1P**, Tetramethyl glycolide homopolymer **33135-50-1P**, L-Lactide homopolymer

RL: IMF (Industrial manufacture); PREP (Preparation)

(cyclic ester preparation and purification by aqueous solvent extraction for preparation of high mol. weight polymers)

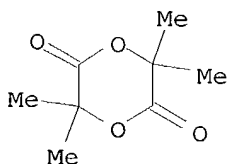
RN 32474-74-1 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,3,6,6-tetramethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 6713-72-0

CMF C8 H12 O4



RN 33135-50-1 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA

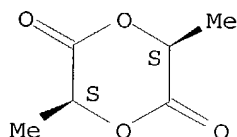
INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



IC ICM C07D319-00

ICS C07D319-12

NCL 549274000

CC 35-2 (Chemistry of Synthetic High Polymers)

ST **cyclic ester** prepn purifn **polymn**; glycolide
tetramethyl prepn purifn **polymn**; ion exchange **cyclic ester** purifn; solvent extn **cyclic ester** purifn

IT Lactones

RL: IMF (Industrial manufacture); PUR (Purification or recovery); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(**cyclic ester** preparation and purification by aqueous solvent extraction for preparation of high mol. weight polymers)

IT Carboxylic acids, processes

RL: REM (Removal or disposal); PROC (Process)
(hydroxy, derivs., impurities; **cyclic ester** preparation and purification by aqueous solvent extraction for preparation of high mol. weight polymers)

IT Carboxylic acids, processes

RL: REM (Removal or disposal); PROC (Process)
(hydroxy, impurity; **cyclic ester** preparation and purification by aqueous solvent extraction for preparation of high mol. weight polymers)

IT Solvents

(in purification of **cyclic ester** for preparation of high mol. weight polymers)

IT 32474-74-1P, Tetramethyl glycolide homopolymer 33135-50-1P, L-Lactide homopolymer

RL: IMF (Industrial manufacture); **PREP (Preparation)**
(**cyclic ester** preparation and purification by aqueous solvent extraction for preparation of high mol. weight polymers)

IT 164790-46-9P 197568-83-5P

RL: IMF (Industrial manufacture); PUR (Purification or recovery); **PREP (Preparation)**
(**cyclic ester** preparation and purification by aqueous solvent extraction for preparation of high mol. weight polymers)

IT 95-96-5P, Lactide 4511-42-6P, L-Lactide 6713-72-0P, Tetramethyl glycolide

RL: IMF (Industrial manufacture); PUR (Purification or recovery); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)

(**cyclic ester** preparation and purification by aqueous solvent extraction for preparation of high mol. weight polymers)

IT 71-43-2, Benzene, uses 100-66-3, Anisole, uses 108-10-1, Methyl isobutyl ketone 108-20-3, Isopropyl ether 108-88-3, Toluene, uses 111-13-7, 2-Octanone 1330-20-7, Xylene, uses

RL: NUU (Other use, unclassified); USES (Uses)

(in purification of **cyclic ester** for preparation of high mol. weight polymers)

L32 ANSWER 43 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1997:684166 CAPLUS

DOCUMENT NUMBER: 127:319376

TITLE: Method to produce and purify **cyclic esters**

INVENTOR(S): Eggeman, Timothy J.; Benecke, Herman P.

PATENT ASSIGNEE(S): Chronopol, Inc., USA

SOURCE: U.S., 19 pp., Cont.-in-part of U.S. 5,420,304.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 17

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|------------------|----------|
| US 5675021 | A | 19971007 | US 1995-417597 | 19950405 |
| US 5319107 | A | 19940607 | US 1992-854559 | 19920319 |
| US 5420304 | A | 19950530 | US 1993-128797 | 19930929 |
| US 5686630 | A | 19971111 | US 1995-473400 | 19950606 |
| TW 457237 | B | 20011001 | TW 1995-84112588 | 19951125 |
| WO 9631494 | A1 | 19961010 | WO 1996-US4464 | 19960401 |
| W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI | | | | |
| RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML | | | | |
| WO 9631506 | A1 | 19961010 | WO 1996-US4465 | 19960401 |
| W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI | | | | |
| RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML | | | | |
| AU 9653824 | A1 | 19961023 | AU 1996-53824 | 19960401 |
| AU 9654386 | A1 | 19961023 | AU 1996-54386 | 19960401 |
| EP 830358 | A1 | 19980325 | EP 1996-911521 | 19960401 |
| R: BE, DE, ES, FR, GB, NL | | | | |
| EP 836598 | A1 | 19980422 | EP 1996-910701 | 19960401 |
| R: BE, DE, ES, FR, GB, NL | | | | |

| | | | | |
|------------------------|----|----------|----------------|-------------|
| CN 1186491 | A | 19980701 | CN 1996-194404 | 19960401 |
| CN 1186490 | A | 19980701 | CN 1996-194422 | 19960401 |
| JP 11503162 | T2 | 19990323 | JP 1996-530411 | 19960401 |
| JP 11504622 | T2 | 19990427 | JP 1996-530412 | 19960401 |
| BR 9604801 | A | 19991130 | BR 1996-4801 | 19960401 |
| US 5856523 | A | 19990105 | US 1997-940592 | 19970930 |
| BR 9608074 | A | 19991130 | BR 1996-8074 | 19971002 |
| PRIORITY APPLN. INFO.: | | | US 1992-854559 | A2 19920319 |
| | | | US 1993-128797 | A2 19930929 |
| | | | US 1990-584126 | A2 19900918 |
| | | | US 1990-584466 | A2 19900918 |
| | | | US 1995-417597 | A2 19950405 |
| | | | US 1995-473400 | A 19950606 |
| | | | WO 1996-US4464 | W 19960401 |
| | | | WO 1996-US4465 | W 19960401 |

AB A **cyclic ester** composition containing ≥ 1 impurity is prepared and contacted with ≥ 1 adsorbent to remove the impurity and recover the purified **cyclic esters**. Specifically, lactide derivs. are purified by contact with ion-exchange resins to remove monomeric free acid and then with zeolites to remove water, improving their storage stability. The purified compns. are suitable for use in the manufacture of polymers having average d.p. >1700 . Thus, 2-hydroxy-2-methylpropionic acid was dimerized to tetramethylglycolide (I) by heating in m-xylene in the presence of TsOH. An acetone solution of the crude I was neutralized and passed through a column containing Amberlyst A 21 to remove free acid, the effluent was evaporated to dryness, recrystd. from petroleum ether, and **polymerized** with tert-BuOLi for 8 h at 130° to give a polymer with weight-average mol. weight 520,000, vs. 17,200 when purification of crude I was limited to recrystn.

IT **32474-74-1P 33135-50-1P**, Poly-L-lactide
 RL: PNU (Preparation, unclassified); **PREP (Preparation)**
 (preparation and purification of **cyclic esters** for **polymerization**)

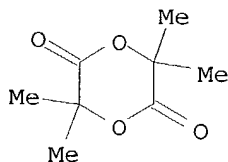
RN 32474-74-1 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,3,6,6-tetramethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 6713-72-0

CMF C8 H12 O4



RN 33135-50-1 CAPLUS

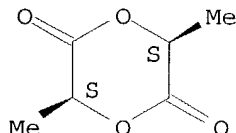
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



IC ICM C07D321-00

ICS C07D321-10

NCL 549274000

CC 35-2 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 28

ST **cyclic ester** purifn adsorption; lactide deriv purifn
adsorption

IT Ion exchangers

Molecular sieves

(adsorbents; preparation and purification of **cyclic esters**
for **polymerization**)

IT Clays, uses

RL: NUU (Other use, unclassified); USES (Uses)

(adsorbents; preparation and purification of **cyclic esters**
for **polymerization**)

IT Polyesters, preparation

RL: PNU (Preparation, unclassified); **PREP (Preparation)**

(aliphatic; preparation and purification of **cyclic esters** for
polymerization)

IT Packaging materials

(for purified **cyclic esters**)

IT Adsorbents

Anion exchangers

Silica gel adsorbents

(preparation and purification of **cyclic esters** for
polymerization)

IT Lactones

RL: IMF (Industrial manufacture); PUR (Purification or recovery); RCT
(Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)

(preparation and purification of **cyclic esters** for
polymerization)

IT Zeolite 3A

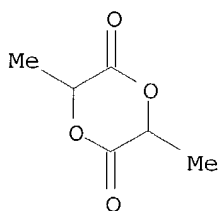
RL: NUU (Other use, unclassified); USES (Uses)

(preparation and purification of **cyclic esters** for
polymerization)

- IT 7440-44-0, Carbon, uses
RL: NUU (Other use, unclassified); USES (Uses)
(activated, adsorbents; preparation and purification of **cyclic esters** for **polymerization**)
- IT 1344-28-1, Alumina, uses
RL: NUU (Other use, unclassified); USES (Uses)
(adsorbents; preparation and purification of **cyclic esters** for **polymerization**)
- IT 9002-88-4, Polyethylene
RL: TEM (Technical or engineered material use); USES (Uses)
(low-d., foil laminates; for packaging purified **cyclic esters**)
- IT 197568-82-4P
RL: BYP (Byproduct); REM (Removal or disposal); **PREP (Preparation)**
; PROC (Process)
(preparation and purification of **cyclic esters** for **polymerization**)
- IT 164790-46-9P 197568-83-5P
RL: IMF (Industrial manufacture); PUR (Purification or recovery); **PREP (Preparation)**
(preparation and purification of **cyclic esters** for **polymerization**)
- IT 95-96-5P, Lactide 6713-72-0P, Tetramethylglycolide
RL: IMF (Industrial manufacture); PUR (Purification or recovery); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(preparation and purification of **cyclic esters** for **polymerization**)
- IT 9017-40-7, Reillex 425 9049-93-8, Amberlyst A 21
RL: NUU (Other use, unclassified); USES (Uses)
(preparation and purification of **cyclic esters** for **polymerization**)
- IT 26161-42-2P 32126-30-0P, Tetramethylglycolide homopolymer, SRU
32474-74-1P 33135-50-1P, Poly-L-lactide
RL: PNU (Preparation, unclassified); **PREP (Preparation)**
(preparation and purification of **cyclic esters** for **polymerization**)
- IT 4511-42-6P, L-Lactide
RL: PUR (Purification or recovery); **PREP (Preparation)**
(preparation and purification of **cyclic esters** for **polymerization**)
- IT 50-21-5, reactions 594-61-6, 2-Hydroxy-2-methylpropionic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation and purification of **cyclic esters** for **polymerization**)
- IT 617-73-2, 2-Hydroxyoctanoic acid
RL: RCT (Reactant); REM (Removal or disposal); PROC (Process); RACT (Reactant or reagent)
(preparation and purification of **cyclic esters** for **polymerization**)

L32 ANSWER 44 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1997:624211 CAPLUS

DOCUMENT NUMBER: 127:278478
 TITLE: New initiators for the ring-opening
**polymerization of cyclic
 esters**
 AUTHOR(S): Stevels, Willem M.; Dijkstra, Pieter J.; Feijen, Jan
 CORPORATE SOURCE: Dep. Chem. Technol., Inst. Biomed. Technol., Univ.
 Twente, Enschede, 7500 AE, Neth.
 SOURCE: Trends in Polymer Science (Cambridge, United Kingdom)
 (1997), 5(9), 300-305
 CODEN: TPSCE8; ISSN: 0966-4793
 PUBLISHER: Elsevier
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: English
 AB A review with 39 refs. on lanthanide compound initiators for ring-opening
polymerization of lactones, especially caprolactone and lactide. Polyesters
 having controlled macromol. architecture have been prepared using these
 initiators.
 IT **26680-10-4P**, Polylactide
 RL: PRP (Properties); SPN (Synthetic preparation); PREP
 (Preparation)
 (preparation by ring-opening **polymerization** using lanthanide compound
 initiators)
 RN 26680-10-4 CAPLUS
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)
 CM 1
 CRN 95-96-5
 CMF C6 H8 O4



CC 35-0 (Chemistry of Synthetic High Polymers)
 ST review lactone **polymn** lanthanide compd catalyst
 IT Polyesters, preparation
 RL: PRP (Properties); SPN (Synthetic preparation); PREP
 (Preparation)
 (lactone-based; preparation by ring-opening **polymerization** of lactones
 using lanthanide compound initiators)
 IT Lactones
 RL: PRP (Properties); SPN (Synthetic preparation); PREP
 (Preparation)
 (polymers; preparation by ring-opening **polymerization** of lactones using
 lanthanide compound initiators)

IT **Polymerization** catalysts
 (ring-opening; lanthanide compound initiators for ring-opening
polymerization of lactones)
 IT 24980-41-4P, Polycaprolactone 25248-42-4P, Polycaprolactone
 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] **26680-10-4P**
 , Polylactide
 RL: PRP (Properties); **SPN (Synthetic preparation); PREP**
(Preparation)
 (preparation by ring-opening **polymerization** using lanthanide compound
 initiators)

L32 ANSWER 45 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1997:571437 CAPLUS
 DOCUMENT NUMBER: 127:162267
 TITLE: Bioabsorptive polyester and its production method
 INVENTOR(S): Funae, Akihiro; Morita, Kenji; Akieda, Hideyuki
 PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Inc., Japan; Mitsui Chemicals
 Inc.
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|------|----------|-----------------|----------|
| JP 09176295 | A2 | 19970708 | JP 1995-339039 | 19951226 |
| JP 3487703 | B2 | 20040119 | | |

PRIORITY APPLN. INFO.: JP 1995-339039 19951226

OTHER SOURCE(S): MARPAT 127:162267

AB The title polyesters, useful for sutures, plates for bonesetting, etc.,
 are prepared by ring-opening **polymerization** of **cyclic**
esters using R1R2R3C6H3 (R1-2 = C1-3 alkyl, H, OH, OMe, OCOMe,
 CO2H, CO2Me, CO2Et, NH2, NHMe, NMe2, NHCOMe; R3 = OH, CO2H) as initiators.
 Glycolide and DL-lactide were copolymd. using acetylsalicylic acid as an
 initiator.

IT **26780-50-7P**, Glycolide-DL-lactide copolymer
 RL: **IMF (Industrial manufacture)**; PRP (Properties); **PREP**
(Preparation)
 (bioabsorptive polyester and its production method)

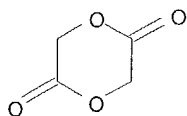
RN 26780-50-7 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 1,4-dioxane-2,5-dione
 (9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6

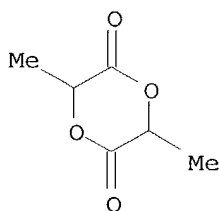
CMF C4 H4 O4



CM 2

CRN 95-96-5

CMF C6 H8 O4



IC ICM C08G063-08
ICS C08G063-20; C08G063-60; C08G063-685; C08G063-78
CC 35-5 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 63
ST bioabsorptive polyester **polymn** initiator; ring opening
polymn initiator polyester; acetylsalicylic acid initiator
polymn
IT Polyesters, preparation
RL: IMF (Industrial manufacture); PRP (Properties); **PREP**
(Preparation)
(bioabsorptive polyester and its production method)
IT **Polymerization** catalysts
(ring-opening; bioabsorptive polyester and its production method)
IT **26780-50-7P**, Glycolide-DL-lactide copolymer
RL: IMF (Industrial manufacture); PRP (Properties); **PREP**
(Preparation)
(bioabsorptive polyester and its production method)
IT 50-78-2, Acetyl salicylic acid 65-85-0, Benzoic acid, reactions
69-72-7, Salicylic acid, reactions 103-90-2 108-95-2, Phenol,
reactions 118-61-6, Ethyl salicylate
RL: RCT (Reactant); RACT (Reactant or reagent)
(bioabsorptive polyester and its production method)

L32 ANSWER 46 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1997:496692 CAPLUS
DOCUMENT NUMBER: 127:109358
TITLE: Manufacture of microspheres and latexes of polyesters
of low particle-size dispersity
INVENTOR(S): Slomkowski, Stanislaw; Penczek, Stanislaw; Sosnowski,

Stanislaw
 PATENT ASSIGNEE(S): PAN, Centrum Badan Molekularnych i Makromolekularnych,
 Pol.
 SOURCE: Pol., 6 pp.
 CODEN: POXXA7
 DOCUMENT TYPE: Patent
 LANGUAGE: Polish
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|----------|-----------------|----------|
| PL 171136 | B1 | 19970328 | PL 1993-300020 | 19930810 |

PRIORITY APPLN. INFO.: PL 1993-300020 19930810

AB Microspheres and latexes of polyesters of low particle-size dispersity, useful as carriers for biol. active compds., are manufactured by **polymn** of **cyclic esters** containing ≥ 1 ester group in the ring such as lactones and cyclic diesters in a mixture of aliphatic hydrocarbons and ethers in the presence of a surfactants based on block or graft copolymers of vinyl monomers and polyesters with mol.-weight polydispersity < 1.15 . A typical graft copolymer surfactant was manufactured by reaction of α -hydro- ω -hydroxypoly(ϵ -caprolactone) having mol.-weight polydispersity 1.1 with methacryloyl chloride, and **polymerization** of the intermediate with dodecyl acrylate.

IT 26680-10-4P, Poly(D,L-lactide) 33135-50-1P, Poly(L-lactide)
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (manufacture of microspheres and latexes of polyesters of low particle-size dispersity in presence of polymeric surfactants)

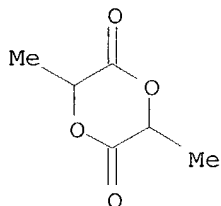
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



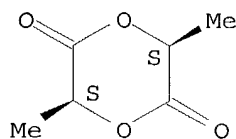
RN 33135-50-1 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6
CMF C6 H8 O4

Absolute stereochemistry.



IC ICM C08G063-08
CC 35-5 (Chemistry of Synthetic High Polymers)
ST polylactone latex low particle size dispersity; dodecyl acrylate caprolactone graft copolymer surfactant; biol active compd carrier polyester; microsphere polyester low particle size dispersity; cyclic diester polymer latex manuf
IT Polyesters, preparation
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); **PREP (Preparation)**; USES (Uses)
(acrylic, graft, surfactants; manufacture of microspheres and latexes of polyesters of low particle-size dispersity in presence of polymeric surfactants)
IT Surfactants
(block or graft acrylic-polyesters; manufacture of microspheres and latexes of polyesters of low particle-size dispersity in presence of polymeric surfactants)
IT Polyesters, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(lactone-based; manufacture of microspheres and latexes of polyesters of low particle-size dispersity in presence of polymeric surfactants)
IT 24980-41-4P, Poly(ϵ -caprolactone) 25248-42-4P, Poly[oxy(1-oxo-1,6-hexanediyl)] 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] 26161-42-2P **26680-10-4P**, Poly(D,L-lactide) **33135-50-1P**, Poly(L-lactide)
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of microspheres and latexes of polyesters of low particle-size dispersity in presence of polymeric surfactants)
IT 112727-51-2P
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(surfactant precursor; manufacture of microspheres and latexes of polyesters of low particle-size dispersity in presence of polymeric surfactants)
IT 160950-41-4P
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); **PREP (Preparation)**; USES (Uses)
(surfactant; manufacture of microspheres and latexes of polyesters of low particle-size dispersity in presence of polymeric surfactants)

L32 ANSWER 47 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1997:411973 CAPLUS
 DOCUMENT NUMBER: 127:122057
 TITLE: Synthesis of degradable crosslinked polymers based on
 1,5-dioxepan-2-one and crosslinker of
 bis- ϵ -caprolactone type
 AUTHOR(S): Palmgren, Ronnie; Karlsson, Sigbritt; Albertsson,
 Ann-Christine
 CORPORATE SOURCE: Department Polymer Technology, Royal Institute
 Technology (KTH), Stockholm, S-100 44, Swed.
 SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry
 (1997), 35(9), 1635-1649
 CODEN: JPACEC; ISSN: 0887-624X
 PUBLISHER: Wiley
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Poly(lactones) may be crosslinked by ring-opening **polymerization** of the
 corresponding **cyclic esters** in the presence of
 tetrafunctional bis(ϵ -caprolactone). The homopolymer of
 1,5-dioxepan-2-one (DXO) has poor mech. properties but also some very good
 properties, such as biocompatibility and degradability. Crosslinking of
 degradable polymer based on DXO was performed with crosslinkers having the
 same reactivity as the monomer. 2,2-Bis(ϵ -caprolacton-4-
 yl)propane (BCP) and bis(ϵ -caprolacton-4-yl) (BCY) with
 tetrafunctionalities were synthesized from the corresponding diols and
 then used as comonomers during the **polymerization** of DXO. The
 comonomers showed the same reactivity to the initiator, stannous
 2-ethylhexanoate, as DXO and perfectly random crosslinked films were
 obtained. The crosslinked films showed a high degree of swelling at 2-3
 mol% BCP or BCY. The BCP crosslinker was somewhat less soluble in DXO at
 lower temps., but all BCP was soluble at 180°C. These polymeric films
 were elastic with no crystallinity and the Tg values increased from
 -39°C for pure DXO to -35°C for BCP crosslinked films and
 -21°C for BCY crosslinked ones.

IT 192801-76-6P 192801-77-7P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (synthesis of degradable crosslinked polyesters based on
 1,5-dioxepan-2-one and crosslinker of bis- ϵ -caprolactone type)

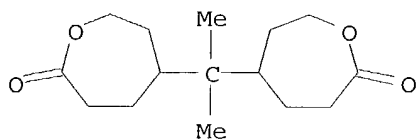
RN 192801-76-6 CAPLUS

CN 1,4-Dioxepan-5-one, polymer with 5,5'-(1-methylethylidene)bis[2-oxepanone]
 (9CI) (CA INDEX NAME)

CM 1

CRN 93745-78-9

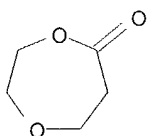
CMF C15 H24 O4



CM 2

CRN 35438-57-4

CMF C5 H8 O3



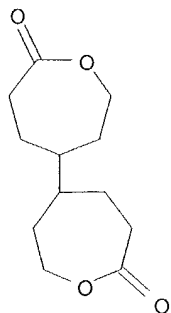
RN 192801-77-7 CAPLUS

CN [4,4'-Bioxepane]-7,7'-dione, polymer with 1,4-dioxepan-5-one (9CI) (CA INDEX NAME)

CM 1

CRN 179523-43-4

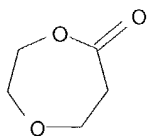
CMF C12 H18 O4



CM 2

CRN 35438-57-4

CMF C5 H8 O3



- CC 35-5 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 37
- ST dioxepanone polyester crosslinking agent; caprolactonylpropane crosslinker
dioxepanone polymer; biscaprolactonyl crosslinker dioxepanone polymer
- IT Glass transition temperature
(glass temperature of degradable crosslinked polyesters based on
1,5-dioxepan-2-one and crosslinker of bis- ϵ -caprolactone type)
- IT Crosslinking agents
(synthesis of degradable crosslinked polyesters based on
1,5-dioxepan-2-one and crosslinker of bis- ϵ -caprolactone type)
- IT Polyesters, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(synthesis of degradable crosslinked polyesters based on
1,5-dioxepan-2-one and crosslinker of bis- ϵ -caprolactone type)
- IT 93745-78-9P 179523-43-4P, [4,4'-Bioxepan]-7,7'-dione
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent)
(crosslinker; synthesis of degradable crosslinked polyesters based on
1,5-dioxepan-2-one and crosslinker of bis- ϵ -caprolactone type)
- IT 7418-16-8P, 2,2-Bis(4-oxocyclohexyl)propane
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent)
(intermediate for crosslinker; synthesis of degradable crosslinked
polyesters based on 1,5-dioxepan-2-one and crosslinker of
bis- ϵ -caprolactone type)
- IT 35438-57-4P, 1,4-Dioxepan-5-one
RL: RCT (Reactant); SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent)
(monomer; synthesis of degradable crosslinked polyesters based on
1,5-dioxepan-2-one and crosslinker of bis- ϵ -caprolactone type)
- IT 80-04-6, 2,2-Bis(4-hydroxycyclohexyl)propane 20601-38-1,
[1,1'-Bicyclohexyl]-4,4'-diol
RL: RCT (Reactant); RACT (Reactant or reagent)
(starting material for crosslinker; synthesis of degradable crosslinked
polyesters based on 1,5-dioxepan-2-one and crosslinker of
bis- ϵ -caprolactone type)
- IT 29943-42-8, Tetrahydro-4H-pyran-4-one
RL: RCT (Reactant); RACT (Reactant or reagent)
(starting material for monomer; synthesis of degradable crosslinked
polyesters based on 1,5-dioxepan-2-one and crosslinker of
bis- ϵ -caprolactone type)
- IT 192801-76-6P 192801-77-7P
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(synthesis of degradable crosslinked polyesters based on

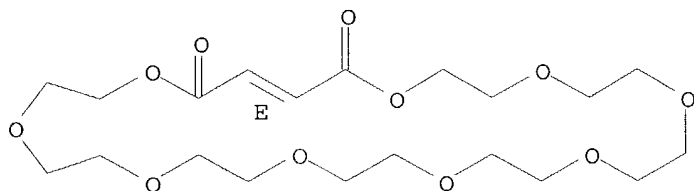
1,5-dioxepan-2-one and crosslinker of bis-ε-caprolactone type)

L32 ANSWER 48 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1997:224172 CAPLUS
DOCUMENT NUMBER: 126:251893
TITLE: New type of crosslinking agents for vinyl polymers
AUTHOR(S): Zada, Anat; Avny, Yair; Zilkha, Albert
CORPORATE SOURCE: Dep. Org. Chem., Hebrew Univ., Jerusalem, 91904,
Israel
SOURCE: Polymer Preprints (American Chemical Society, Division
of Polymer Chemistry) (1997), 38(1), 145-146
CODEN: ACPPAY; ISSN: 0032-3934
PUBLISHER: American Chemical Society, Division of Polymer
Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Cyclic octaethylene glycol fumarate was prepared from fumaryl chloride and
octaethylene glycol and **polymerized** to give a soft polymer soluble in
various solvents. **Copolymn.** of the **cyclic**
ester with styrene or Me methacrylate gave insol. crosslinked
polymers that swelled in various solvents.
IT 188650-35-3P 188650-36-4P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of crosslinked)
RN 188650-35-3 CAPLUS
CN 1,4,7,10,13,16,19,22,25-Nonaoxacyclononacos-27-ene-26,29-dione, (27E)-,
polymer with ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 188650-33-1
CMF C20 H34 O11

Double bond geometry as shown.



CM 2

CRN 100-42-5
CMF C8 H8

$\text{H}_2\text{C}=\text{CH}-\text{Ph}$

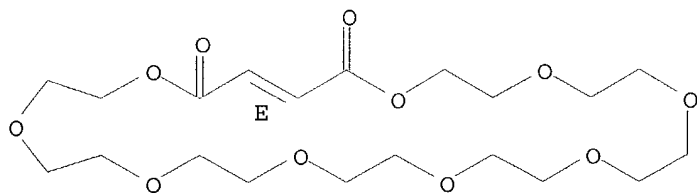
RN 188650-36-4 CAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with
(27E)-1,4,7,10,13,16,19,22,25-nonaoxacyclononacos-27-ene-26,29-dione (9CI)
(CA INDEX NAME)

CM 1

CRN 188650-33-1

CMF C20 H34 O11

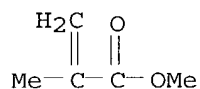
Double bond geometry as shown.



CM 2

CRN 80-62-6

CMF C5 H8 O2



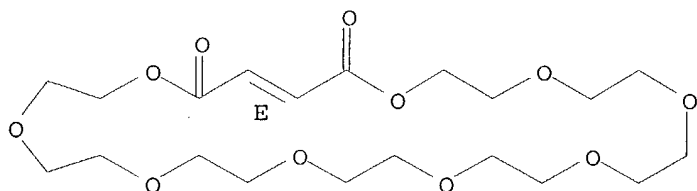
IT 188650-34-2P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of soft)
RN 188650-34-2 CAPLUS
CN 1,4,7,10,13,16,19,22,25-Nonaoxacyclononacos-27-ene-26,29-dione, (27E)-,
homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 188650-33-1

CMF C20 H34 O11

Double bond geometry as shown.



- CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 35
- ST cyclic octaethylene glycol fumarate prepolymer; crosslinker
cyclic octaethylene glycol fumarate; styrene copolymer cyclic octaethylene
glycol fumarate; methacrylate copolymer cyclic octaethylene glycol
fumarate
- IT Crosslinking agents
(preparation of cyclic octaethylene glycol fumarate as crosslinking agents
for vinyl polymers)
- IT 627-63-4, Fumaryl chloride 5117-19-1, Octaethylene glycol
RL: RCT (Reactant); RACT (Reactant or reagent)
(in preparation of cyclic octaethylene glycol fumarate as crosslinking
agents for vinyl polymers)
- IT 188650-35-3P 188650-36-4P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of crosslinked)
- IT 188650-33-1P
RL: MOA (Modifier or additive use); RCT (Reactant); SPN (Synthetic
preparation); PREP (Preparation); RACT (Reactant or reagent);
USES (Uses)
(preparation of cyclic octaethylene glycol fumarate as crosslinking agents
for vinyl polymers)
- IT 188650-34-2P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of soft)

L32 ANSWER 49 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1997:177090 CAPLUS

DOCUMENT NUMBER: 126:171929

TITLE: Macromolecular engineering of polylactones and
polylactides by ring-opening polymerization

AUTHOR(S): Dubois, Philippe; Degee, Philippe; Ropson, Nathalie;
Jerome, Robert

CORPORATE SOURCE: University of Liege, Liege, Belg.

SOURCE: Plastics Engineering (New York) (1997),
40(Macromolecular Design of Polymeric Materials),
247-272
CODEN: PLENEZ; ISSN: 1040-2527

PUBLISHER: Dekker

DOCUMENT TYPE: Journal; General Review

LANGUAGE: English

AB Recent advances in the ring-opening polymerization of cyclic
(di)esters initiated with aluminum alkoxides are reviewed with

67 refs. with emphasis on the controlled synthesis of high-mol-weight poly(ϵ -caprolactone) and polylactide initiated by aluminum isopropoxide and the macromol. engineering of aliphatic polyesters.

IT 26680-10-4P, Polylactide

RL: SPN (Synthetic preparation); PREP (Preparation)

(macromol. engineering of polylactones and polylactides by ring-opening polymerization)

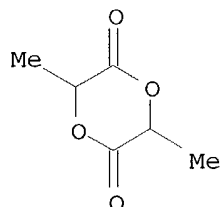
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



CC 35-0 (Chemistry of Synthetic High Polymers)

ST review ring opening **polymn cyclic ester**;
lactone ring opening **polymn** review; lactide ring opening
polymn review

IT Polyesters, preparation

RL: SPN (Synthetic preparation); PREP (Preparation)

(aliphatic; in macromol. engineering of polylactones and polylactides by ring-opening polymerization)

IT Polymerization

(ring-opening; macromol. engineering of polylactones and polylactides by)

IT 555-31-7, Aluminum isopropoxide

RL: CAT (Catalyst use); USES (Uses)

(catalyst; in macromol. engineering of polylactones and polylactides by ring-opening polymerization)

IT 24980-41-4P, Poly(ϵ -caprolactone) 25248-42-4P,

Poly[oxy(1-oxo-1,6-hexanediyl)] 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] 26680-10-4P, Polylactide

RL: SPN (Synthetic preparation); PREP (Preparation)

(macromol. engineering of polylactones and polylactides by ring-opening polymerization)

L32 ANSWER 50 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

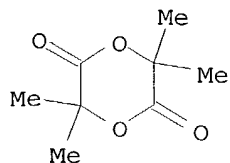
ACCESSION NUMBER: 1996:733944 CAPLUS

DOCUMENT NUMBER: 126:8817

TITLE: Method to produce and purify **cyclic esters**

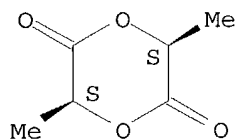
INVENTOR(S): Eggeman, Timothy J.; Benecke, Herman P.
 PATENT ASSIGNEE(S): Chronopol, Inc., USA
 SOURCE: PCT Int. Appl., 79 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 17
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|----------|-----------------|-------------|
| WO 9631506 | A1 | 19961010 | WO 1996-US4465 | 19960401 |
| W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI | | | | |
| RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML | | | | |
| US 5675021 | A | 19971007 | US 1995-417597 | 19950405 |
| AU 9654386 | A1 | 19961023 | AU 1996-54386 | 19960401 |
| EP 830358 | A1 | 19980325 | EP 1996-911521 | 19960401 |
| R: BE, DE, ES, FR, GB, NL | | | | |
| JP 11504622 | T2 | 19990427 | JP 1996-530412 | 19960401 |
| BR 9604801 | A | 19991130 | BR 1996-4801 | 19960401 |
| BR 9608074 | A | 19991130 | BR 1996-8074 | 19971002 |
| PRIORITY APPLN. INFO.: | | | US 1995-417597 | A 19950405 |
| | | | US 1992-854559 | A2 19920319 |
| | | | US 1993-128797 | A2 19930929 |
| | | | US 1995-473400 | A 19950606 |
| | | | WO 1996-US4465 | W 19960401 |
| AB | Feed streams of cyclic esters are manufactured by dewatering feed streams containing ≥ 1 of a hydroxy carboxylic acid or its ester, salt, or amide, and dimers, trimers, tetramers, and pentamers of these compds. so that the product contains <20% pentamers and higher oligomers. These cyclic ester -containing feed streams are treated with adsorbents that do not degrade the cyclic ester in ≥ 1 step to remove water and(or) free acid. Highly pure cyclic esters are manufactured and are are polymerizable to give polymers having an average d.p. >1700. | | | |
| IT | 32474-74-1P, Poly(tetramethylglycolide) 33135-50-1P, L-Lactide polymer | | | |
| | RL: IMF (Industrial manufacture); PREP (Preparation) (manufacture, purification (using adsorbents), and polymerization of cyclic esters of hydroxy acids) | | | |
| RN | 32474-74-1 CAPLUS | | | |
| CN | 1,4-Dioxane-2,5-dione, 3,3,6,6-tetramethyl-, homopolymer (9CI) (CA INDEX NAME) | | | |
| CM | 1 | | | |
| CRN | 6713-72-0 | | | |
| CMF | C8 H12 O4 | | | |



RN 33135-50-1 CAPLUS
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA
 INDEX NAME)
 CM 1
 CRN 4511-42-6
 CMF C6 H8 O4

Absolute stereochemistry.



IC ICM C07D407-00
 ICS C07D321-00; C08L001-00; C08F020-00
 CC 35-5 (Chemistry of Synthetic High Polymers)
 ST **cyclic ester** hydroxy acid manuf; polyester manuf
cyclic ester based; lactone manuf hydroxy acid;
 adsorbent purifn **cyclic ester**
 IT Anion exchangers
 Molecular sieves
 (adsorbent; manufacture, purification (using adsorbents), and **polymerization**
 of **cyclic esters** of hydroxy acids)
 IT Clays, uses
 Silica gel, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (adsorbent; manufacture, purification (using adsorbents), and **polymerization**
 of **cyclic esters** of hydroxy acids)
 IT Carboxylic acids, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydroxy, salts; manufacture, purification (using adsorbents), and **polymn**
 of **cyclic esters** of hydroxy acids)
 IT Amides, reactions
 Carboxylic acids, reactions
 Esters, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydroxy; manufacture, purification (using adsorbents), and **polymerization**
 of

- cyclic esters of hydroxy acids)**
- IT Adsorbents
(manufacture, purification (using adsorbents), and **polymerization of cyclic esters of hydroxy acids)**
- IT Polyesters, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(manufacture, purification (using adsorbents), and **polymerization of cyclic esters of hydroxy acids)**
- IT Lactones
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(manufacture, purification (using adsorbents), and **polymerization of cyclic esters of hydroxy acids)**
- IT 7440-44-0, Carbon, uses
RL: NUU (Other use, unclassified); USES (Uses)
(activated, adsorbent; manufacture, purification (using adsorbents), and **polymerization of cyclic esters of hydroxy acids)**
- IT 1344-28-1, Alumina, uses 9003-55-8D, Butadiene-styrene copolymer, tertiary amine derivs. 9017-40-7, Reillex 425 9049-93-8, Amberlyst A-21
RL: NUU (Other use, unclassified); USES (Uses)
(adsorbent; manufacture, purification (using adsorbents), and **polymerization of cyclic esters of hydroxy acids)**
- IT 79-14-1DP, Glycolic acid, cyclic lactone derivs. 87-69-4DP, Tartaric acid, cyclic lactone derivs., preparation 90-64-2DP, Mandelic acid, cyclic lactone derivs. 95-96-5P, Lactide 515-30-0DP, 2-Hydroxy-2-phenylpropionic acid, cyclic lactone derivs. 600-15-7DP, 2-Hydroxybutanoic acid, cyclic lactone derivs. 617-31-2DP, 2-Hydroxypentanoic acid, cyclic lactone derivs. 1123-28-0DP, 1-Hydroxy-1-cyclohexanecarboxylic acid, cyclic lactone derivs. 3739-30-8DP, 2-Hydroxy-2-methylbutanoic acid, cyclic lactone derivs. 6064-63-7DP, 2-Hydroxycaproic acid, cyclic lactone derivs. 6915-15-7DP, Malic acid, cyclic lactone derivs. 19377-73-2DP, 2-Hydroxy-2-(2-furanyl) ethanoic acid, cyclic lactone derivs. 26161-42-2P, Poly(L-Lactide), sru 32126-30-0P **32474-74-1P**, Poly(tetramethylglycolide) **33135-50-1P**, L-Lactide polymer 152998-36-2DP, 2-Hydroxy-2-(2-tetrahydrofuranyl) ethanoic acid, cyclic lactone derivs. 164790-46-9P
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture, purification (using adsorbents), and **polymerization of cyclic esters of hydroxy acids)**
- IT 4511-42-6P, L-Lactide 6713-72-0P, Tetramethylglycolide
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(manufacture, purification (using adsorbents), and **polymerization of cyclic esters of hydroxy acids)**
- IT 50-21-5, Lactic acid, reactions 79-14-1, Glycolic acid, reactions 79-33-4, L-Lactic acid, reactions 87-69-4, Tartaric acid, reactions 90-64-2, Mandelic acid 515-30-0, 2-Hydroxy-2-phenylpropionic acid 594-61-6, 2-Hydroxy-2-methylpropionic acid 600-15-7, 2-Hydroxybutanoic acid 617-31-2, 2-Hydroxypentanoic acid 617-73-2, 2-Hydroxyoctanoic acid 1123-28-0, 1-Hydroxy-1-cyclohexanecarboxylic acid 3739-30-8,

2-Hydroxy-2-methylbutanoic acid 6064-63-7, 2-Hydroxycaproic acid
 6915-15-7, Malic acid 19377-73-2, 2-Hydroxy-2-(2-furanyl)ethanoic acid
 152998-36-2, 2-Hydroxy-2-(2-tetrahydrofuranyl)ethanoic acid
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (manufacture, purification (using adsorbents), and **polymerization** of
cyclic esters of hydroxy acids)

L32 ANSWER 51 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1996:724174 CAPLUS
 DOCUMENT NUMBER: 125:329830
 TITLE: Manufacture and purification of **cyclic esters**
 INVENTOR(S): Miao, Fudu; Eggeman, Timothy J.
 PATENT ASSIGNEE(S): Chronopol, Inc., USA
 SOURCE: PCT Int. Appl., 80 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 17
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|-------------|
| WO 9631494 | A1 | 19961010 | WO 1996-US4464 | 19960401 |
| W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI | | | | |
| RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML | | | | |
| US 5675021 | A | 19971007 | US 1995-417597 | 19950405 |
| US 5686630 | A | 19971111 | US 1995-473400 | 19950606 |
| AU 9653824 | A1 | 19961023 | AU 1996-53824 | 19960401 |
| EP 836598 | A1 | 19980422 | EP 1996-910701 | 19960401 |
| R: BE, DE, ES, FR, GB, NL | | | | |
| JP 11503162 | T2 | 19990323 | JP 1996-530411 | 19960401 |
| PRIORITY APPLN. INFO.: | | | US 1995-417597 | A 19950405 |
| | | | US 1995-473400 | A 19950606 |
| | | | US 1992-854559 | A2 19920319 |
| | | | US 1993-128797 | A2 19930929 |
| | | | WO 1996-US4464 | W 19960401 |

AB **Cyclic esters**, prepared from hydroxy carboxylic acids or their esters, salts, or amides, are purified by by adsorption of impurities from solvents containing the **cyclic esters** or by adding <3% aqueous solvent into a **cyclic ester**-containing composition and allowing two phases to form. A first phase includes **cyclic esters** and any organic solvent, and a second phase includes the aqueous solvent and impurities. Optionally, the first phase is an adsorbent to remove impurities. The purified **cyclic esters** are useful for manufacture of polyesters. Thus, cyclizing 2-hydroxy-2-methylpropionic acid in m-xylene in the presence of p-toluenesulfonic acid, washing the crude product with Na₂CO₃,

neutralizing, drying, dissolving in Me₂CO, passing the Me₂CO solution through an Amberlyst A-21 column, evaporating the column effluent to dryness, recrystg. the resulting solid from petroleum ether, and **polymerizing** the purified tetramethylglycolide in the presence of Li tert-butoxide 8 h at 130° gave polymer with weight-average mol. weight 520,000.

IT 32474-74-1P, Poly(tetramethylglycolide) 33135-50-1P,

L-Lactide homopolymer

RL: IMF (Industrial manufacture); PREP (Preparation)

(manufacture and purification and polymerization of cyclic esters)

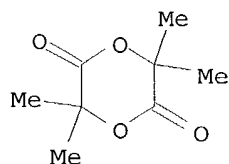
RN 32474-74-1 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,3,6,6-tetramethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 6713-72-0

CMF C8 H12 O4



RN 33135-50-1 CAPLUS

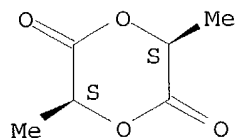
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



IC ICM C07D307-94

ICS C07D311-96; C07D313-06; C07D313-16; C07D319-00; C07D319-12; C07D407-00; C08F020-00

CC 35-5 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 27

ST purifn cyclic ester; polyester manuf cyclic ester monomer; tetramethylglycolide purifn polymn

- IT Polyesters, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(manufacture and purification and **polymerization of cyclic esters**)
- IT Lactones
RL: IMF (Industrial manufacture); PUR (Purification or recovery); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(manufacture and purification and **polymerization of cyclic esters**)
- IT 79-33-4, L-Lactic acid, reactions 594-61-6, 2-Hydroxy-2-methylpropionic acid 617-73-2, 2-Hydroxyoctanoic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(**cyclic ester precursor**; manufacture and purification and **polymerization of cyclic esters**)
- IT 26161-42-2P, L-Lactide homopolymer, sru 32126-30-0P **32474-74-1P**, Poly(tetramethylglycolide) **33135-50-1P**, L-Lactide homopolymer
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture and purification and **polymerization of cyclic esters**)
- IT 164790-46-9P
RL: IMF (Industrial manufacture); PUR (Purification or recovery); **PREP (Preparation)**
(manufacture and purification and **polymerization of cyclic esters**)
- IT 95-96-5P, Lactide 4511-42-6P, L-Lactide 6713-72-0P, Tetramethylglycolide
RL: IMF (Industrial manufacture); PUR (Purification or recovery); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(manufacture and purification and **polymerization of cyclic esters**)
- L32 ANSWER 52 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:531647 CAPLUS
DOCUMENT NUMBER: 125:168724
TITLE: Evidence for **Ester-Exchange Reactions and Cyclic Oligomers Formation in the Ring-Opening Polymerization of Lactide with Aluminum Complex Initiators**
AUTHOR(S): Montaudo, Giorgio; Montaudo, Maurizio S.; Puglisi, Concetto; Samperi, and Filippo; Spassky, N.; LeBorgne, Alain; Wisniewski, Muriel
CORPORATE SOURCE: Dipartimento di Scienze Chimiche, Universita' di Catania, Catania, 6-95125, Italy
SOURCE: Macromolecules (1996), 29(20), 6461-6465
CODEN: MAMOBX; ISSN: 0024-9297
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
- AB Four polylactide samples, obtained by ring-opening **polymerization** with an Al alkoxide initiator derived from a Schiff's base, were characterized by MALDI-TOF mass spectrometry. The MALDI mass spectra of these polylactides show well-resolved signals that can be reliably assigned to

polylactide oligomers. Remarkably, both even-membered and odd-membered oligomers are present in these MALDI spectra. The presence of odd-membered oligomers cannot be explained on the basis of the lactide ring-opening **polymerization**, and one must admit that ester-exchange reactions do occur parallel to the **polymerization** process, causing a random cleavage of the polylactide chain. Furthermore, evidence for the presence of cyclic lactides was found in the MALDI-TOF spectrum of a low mol. weight polylactide fraction, indicating that ester exchange occurs also in polylactides by intramol. end-biting reactions (ring-chain equilibration), with formation of cyclic oligomers.

IT 26680-10-4P, Polylactide

RL: PEP (Physical, engineering or chemical process); **SPN (Synthetic preparation)**; **PREP (Preparation)**; PROC (Process)

(**ester**-exchange reactions and **cyclic** oligomer formation in ring-opening **polymerization** of lactide with aluminum complex initiators)

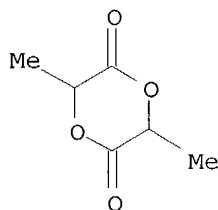
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



CC 35-3 (Chemistry of Synthetic High Polymers)

ST **ester** exchange ring opening **polymn** lactide

IT **Polymerization** catalysts

(**ester**-exchange reactions and **cyclic** oligomer formation in ring-opening **polymerization** of lactide with aluminum complex initiators)

IT Polyesters, preparation

RL: PEP (Physical, engineering or chemical process); **SPN (Synthetic preparation)**; **PREP (Preparation)**; PROC (Process)

(lactide, **ester**-exchange reactions and **cyclic** oligomer formation in ring-opening **polymerization** of lactide with aluminum complex initiators)

IT **Polymerization**

(ring-opening, **ester**-exchange reactions and **cyclic** oligomer formation in ring-opening **polymerization** of lactide with aluminum complex initiators)

IT 157078-46-1, [2,2'-[Ethylenebis(nitrilomethylidene)]diphenolate]aluminum methoxide

RL: CAT (Catalyst use); USES (Uses)
(**ester**-exchange reactions and **cyclic** oligomer
formation in ring-opening **polymerization** of lactide with aluminum
complex initiators)

IT 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] 26680-10-4P
, Polylactide

RL: PEP (Physical, engineering or chemical process); SPN (**Synthetic
preparation**); PREP (**Preparation**); PROC (Process)
(**ester**-exchange reactions and **cyclic** oligomer
formation in ring-opening **polymerization** of lactide with aluminum
complex initiators)

L32 ANSWER 53 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1995:715696 CAPLUS

DOCUMENT NUMBER: 123:112953

TITLE: Copolymerization of 2,2-dimethyltrimethylene carbonate
and **cyclic esters**

AUTHOR(S): Keul, Helmut; Schmidt, Peter; Robertz, Bernd; Hoecker,
Hartwig

CORPORATE SOURCE: Rheinisch-Westfaelischen Technischen Hochschule
Aschen, Aachen, 52056, Germany

SOURCE: Macromolecular Symposia (1995), 95(Synthesis of
Controlled Polymeric Structures through Living
Polymerizations and Related Processes), 243-53
CODEN: MSYMEC; ISSN: 1022-1360

PUBLISHER: Huethig & Wepf

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The anionic and/or insertion copolymn. of 2,2-dimethyltrimethylene
carbonate (DTC) with ϵ -caprolactone (ECL), pivalolactone (PVL) and
L-lactide (LLA) is presented with special emphasis on the copolymn.
mechanism. Statistical copolymers are obtained by copolymn. of DTC with
ECL and with LLA, while with PVL a block copolymer is obtained. The role
of transesterification on the microstructure is discussed.

IT 148851-29-0P, 2,2-Dimethyltrimethylene carbonate-L-lactide
copolymer

RL: SPN (**Synthetic preparation**); PREP (**Preparation**)
(copolymn. of 2,2-dimethyltrimethylene carbonate and **cyclic
esters**)

RN 148851-29-0 CAPLUS

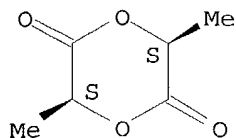
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with
5,5-dimethyl-1,3-dioxan-2-one (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

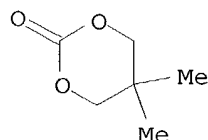
Absolute stereochemistry.



CM 2

CRN 3592-12-9

CMF C6 H10 O3



- CC 35-5 (Chemistry of Synthetic High Polymers)
- ST **copolymer** dimethyltrimethylene carbonate **cyclic ester**; microstructure polycarbonate polyester block; insertion transesterification **polymer** mechanism
- IT Chains, chemical
(copolymer. of 2,2-dimethyltrimethylene carbonate and **cyclic esters**)
- IT **Polymerization**
(insertion; copolymer. of 2,2-dimethyltrimethylene carbonate and **cyclic esters**)
- IT **Polymerization**
(anionic, copolymer. of 2,2-dimethyltrimethylene carbonate and **cyclic esters**)
- IT Polyesters, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(polycarbonate-, copolymer. of 2,2-dimethyltrimethylene carbonate and **cyclic esters**)
- IT Polyesters, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(polycarbonate-, block, copolymer. of 2,2-dimethyltrimethylene carbonate and **cyclic esters**)
- IT Polycarbonates, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(polyester-, copolymer. of 2,2-dimethyltrimethylene carbonate and **cyclic esters**)
- IT Polycarbonates, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(polyester-, block, copolymer. of 2,2-dimethyltrimethylene carbonate and **cyclic esters**)
- IT 502-44-3, ε-Caprolactone 1955-45-9, Pivalolactone 3592-12-9,

2,2-Dimethyltrimethylene carbonate 4511-42-6, L-Lactide 29035-04-9,
 ϵ -Caprolactone-2,2-Dimethyltrimethylene carbonate copolymer

RL: RCT (Reactant); RACT (Reactant or reagent)

(copolymn. of 2,2-dimethyltrimethylene carbonate and **cyclic esters**)

IT 130055-00-4P, 2,2-Dimethyltrimethylene carbonate-pivalolactone block
 copolymer **148851-29-0P**, 2,2-Dimethyltrimethylene
 carbonate-L-lactide copolymer

RL: **SPN (Synthetic preparation); PREP (Preparation)**

(copolymn. of 2,2-dimethyltrimethylene carbonate and **cyclic esters**)

L32 ANSWER 54 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1995:689910 CAPLUS

DOCUMENT NUMBER: 123:56953

TITLE: Manufacture of biodegradable polyesters

INVENTOR(S): Takada, Morio; Kakizawa, Yasutoshi

PATENT ASSIGNEE(S): Dainippon Ink & Chemicals, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|------|----------|-----------------|----------|
| JP 07026001 | A2 | 19950127 | JP 1993-171517 | 19930712 |
| JP 3309502 | B2 | 20020729 | | |
| US 5484882 | A | 19960116 | US 1994-272191 | 19940708 |

PRIORITY APPLN. INFO.: JP 1993-171517 A 19930712

AB Biodegradable polyesters are manufactured by ring-opening **polymerization** of
 dimeric **cyclic esters** of hydroxycarboxylic acids
 and/or lactones, optionally in the presence of other polyester-forming
 monomers or polyesters; the manufacturing method is characterized by using a
polymerization reactor equipped with a static mixer. Thus L-dilactide
 and ϵ -caprolactone were **polymerized**

IT **65408-67-5P**, ϵ -Caprolactone-L-lactide copolymer

153116-63-3P 165181-59-9P 165181-60-2P

165181-61-3P 165181-62-4P

RL: **IMF (Industrial manufacture); PREP (Preparation)**

(manufacture of biodegradable polyesters)

RN 65408-67-5 CAPLUS

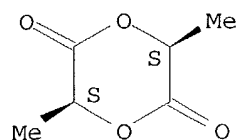
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with 2-oxepanone
 (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

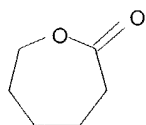
Absolute stereochemistry.



CM 2

CRN 502-44-3

CMF C6 H10 O2



RN 153116-63-3 CAPLUS

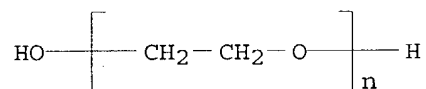
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with
 α -hydro- ω -hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX
 NAME)

CM 1

CRN 25322-68-3

CMF (C2 H4 O)_n H2 O

CCI PMS

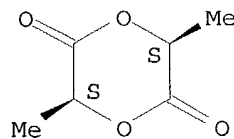


CM 2

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



RN 165181-59-9 CAPLUS

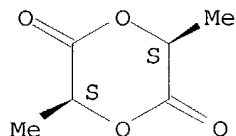
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S-cis)-, polymer with
3,4-dihydro-2H-1-benzopyran-2-one (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

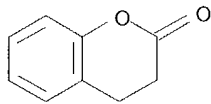
Absolute stereochemistry.



CM 2

CRN 119-84-6

CMF C9 H8 O2



RN 165181-60-2 CAPLUS

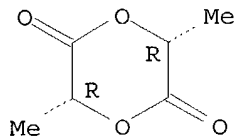
CN Butanedioic acid, polymer with (3R-cis)-3,6-dimethyl-1,4-dioxane-2,5-dione, (3S-cis)-3,6-dimethyl-1,4-dioxane-2,5-dione and 1,2-ethanediol
(9CI) (CA INDEX NAME)

CM 1

CRN 13076-17-0

CMF C6 H8 O4

Absolute stereochemistry.

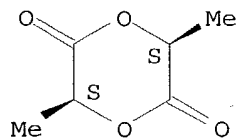


CM 2

CRN 4511-42-6

CMF C6 H8 O4

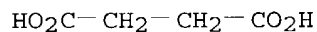
Absolute stereochemistry.



CM 3

CRN 110-15-6

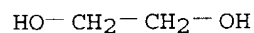
CMF C4 H6 O4



CM 4

CRN 107-21-1

CMF C2 H6 O2



RN 165181-61-3 CAPLUS

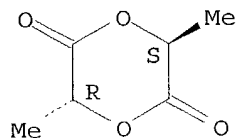
CN 1,4-Benzenedicarboxylic acid, polymer with trans-3,6-dimethyl-1,4-dioxane-2,5-dione, (3S-cis)-3,6-dimethyl-1,4-dioxane-2,5-dione and 1,2-ethanediol (9CI) (CA INDEX NAME)

CM 1

CRN 13076-19-2

CMF C6 H8 O4

Relative stereochemistry.

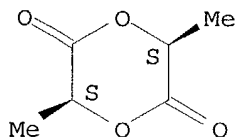


CM 2

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



CM 3

CRN 107-21-1

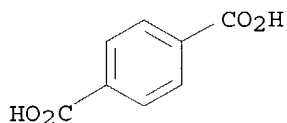
CMF C2 H6 O2

HO-CH₂-CH₂-OH

CM 4

CRN 100-21-0

CMF C8 H6 O4



RN 165181-62-4 CAPLUS

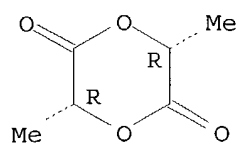
CN 1,3-Benzenedicarboxylic acid, polymer with 1,4-benzenedicarboxylic acid, (3R,6R)-3,6-dimethyl-1,4-dioxane-2,5-dione, (3S,6S)-3,6-dimethyl-1,4-dioxane-2,5-dione, 2,2-dimethyl-1,3-propanediol, 1,2-ethanediol and hexanedioic acid (9CI) (CA INDEX NAME)

CM 1

CRN 13076-17-0

CMF C6 H8 O4

Absolute stereochemistry.

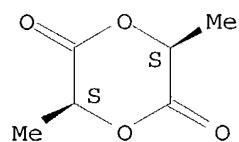


CM 2

CRN 4511-42-6

CMF C6 H8 O4

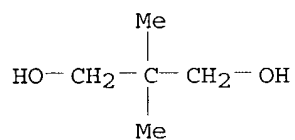
Absolute stereochemistry.



CM 3

CRN 126-30-7

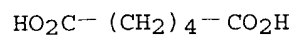
CMF C5 H12 O2



CM 4

CRN 124-04-9

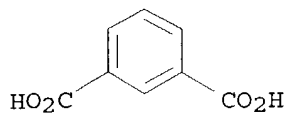
CMF C6 H10 O4



CM 5

CRN 121-91-5

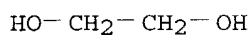
CMF C8 H6 O4



CM 6

CRN 107-21-1

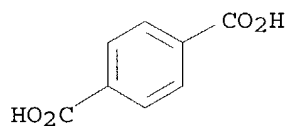
CMF C2 H6 O2



CM 7

CRN 100-21-0

CMF C8 H6 O4



IC ICM C08G063-78
ICS C08G063-08
CC 35-7 (Chemistry of Synthetic High Polymers)
ST polyester biodegradable manuf; **polymn** app static mixer
IT Biodegradable materials
(manufacture of biodegradable polyesters)
IT Polyesters, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(manufacture of biodegradable polyesters)
IT **Polymerization**
(apparatus, manufacture of biodegradable polyesters)
IT Mixing apparatus
(static, manufacture of biodegradable polyesters)
IT 29612-36-0P, ϵ -Caprolactone- δ -valerolactone copolymer
65408-67-5P, ϵ -Caprolactone-L-lactide copolymer
153116-63-3P 165181-59-9P 165181-60-2P
165181-61-3P 165181-62-4P
RL: **IMF (Industrial manufacture); PREP (Preparation)**
(manufacture of biodegradable polyesters)

L32 ANSWER 55 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1995:538357 CAPLUS

DOCUMENT NUMBER: 122:266384
 TITLE: Process for the preparation of tin-free homo- or copolyesters of aliphatic hydroxycarboxylic acids
 INVENTOR(S): Rafler, Gerald; Dahlmann, Juergen
 PATENT ASSIGNEE(S): Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung EV, Germany
 SOURCE: Ger. Offen., 4 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|----------|-----------------|----------|
| DE 4318204 | A1 | 19941208 | DE 1993-4318204 | 19930601 |
| DE 4318204 | C2 | 19980115 | | |

PRIORITY APPLN. INFO.: DE 1993-4318204 19930601

AB The title polymers are prepared by catalytic ring-opening **polymerization** of **cyclic esters** at 60-180° in the melt, in the presence of anhydrous Zr(IV) compound, e.g., Zr tetrakis(acetylacetonate) (I). The **cyclic ester** monomers can be subjected to a pretreatment with an organosilicon compound, e.g., (Me₃Si)₂NH, to remove OH-containing impurities. Thus, heating 14.4 g D,L-lactide for 0.5 h at 150° with 0.244 g I under inert gas atmospheric gave the appropriate polylactide (mol. weight 51,400 g/mol) in 85% yield.

IT 26680-10-4P, Poly-D,L-lactide 26780-50-7P, Glycolide-DL-lactide copolymer 33135-50-1P, Poly-L-lactide

RL: IMF (Industrial manufacture); PREP (Preparation)

(process for the preparation of tin-free homo- or copolyesters of aliphatic hydroxycarboxylic acids)

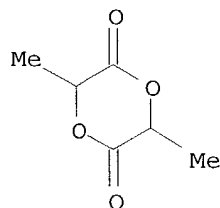
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



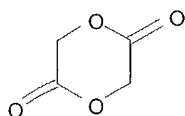
RN 26780-50-7 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 1,4-dioxane-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6

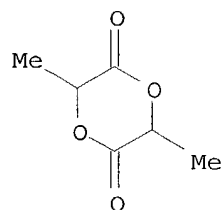
CMF C4 H4 O4



CM 2

CRN 95-96-5

CMF C6 H8 O4



RN 33135-50-1 CAPLUS

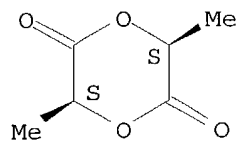
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



IC ICM C08G063-08

ICS C08G063-85

ICA A61F002-02; A61F002-28

CC 35-5 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67

- ST polylactide; lactide **polymn** zirconium compd catalyst; zirconium tetrakisacetylacetonate catalyst lactide **polymn**; acetylacetonate zirconium catalyst lactide **polymn**; hydroxycarboxylate **polymn** zirconium tetrakisacetylacetonate catalyst
- IT Lactones
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (ring-opening **polymerization** of; process for the preparation of tin-free homo- or copolyesters of aliphatic hydroxycarboxylic acids)
- IT Polyesters, preparation
 RL: IMF (Industrial manufacture); **PREP (Preparation)**
 (hydroxycarboxylic acid-based, homo- and co-, aliphatic; process for the preparation of tin-free homo- or copolyesters of aliphatic hydroxycarboxylic acids)
- IT **Polymerization**
 (ring-opening, of **cyclic esters**; process for the preparation of tin-free homo- or copolyesters of aliphatic hydroxycarboxylic acids)
- IT 999-97-3, Hexamethyldisilazane
 RL: MOA (Modifier or additive use); **USES (Uses)**
 (for removal of OH-containing impurities from lactone monomers; process for the preparation of tin-free homo- or copolyesters of aliphatic hydroxycarboxylic acids)
- IT 14475-63-9D, Zirconic acid, tetraalkyl esters 18717-38-9, Diacetylacetonatozirconium dichloride 80042-49-5
 RL: CAT (Catalyst use); **USES (Uses)**
 (process for the preparation of tin-free homo- or copolyesters of aliphatic hydroxycarboxylic acids)
- IT 24980-41-4P, ϵ -Caprolactone polymer 25248-42-4P, ϵ -Caprolactone polymer, SRU 26023-30-3P 26161-42-2P **26680-10-4P**, Poly-D,L-lactide **26780-50-7P**, Glycolide-DL-lactide copolymer 31852-84-3P, Trimethylene carbonate polymer **33135-50-1P**, Poly-L-lactide 50862-75-4P, Trimethylene carbonate polymer, SRU
 RL: **IMF (Industrial manufacture); PREP (Preparation)**
 (process for the preparation of tin-free homo- or copolyesters of aliphatic hydroxycarboxylic acids)
- IT 17501-44-9, Zirconium tetrakis(acetylacetonate)
 RL: CAT (Catalyst use); **USES (Uses)**
 (ring-opening **polymerization** catalyst; process for the preparation of tin-free homo- or copolyesters of aliphatic hydroxycarboxylic acids)

L32 ANSWER 56 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1995:511495 CAPLUS

DOCUMENT NUMBER: 122:240787

TITLE: Preparation of polyester of controlled molecular weight based on the determination of free acid impurities in monomer

INVENTOR(S): Shinoda, Hosei; Ohtaguro, Masami; Funae, Akihiro; Iimuro, Shigeru

PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Inc., Japan

SOURCE: Eur. Pat. Appl., 18 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------------------------|------|----------|-----------------|------------|
| EP 624613 | A2 | 19941117 | EP 1994-106977 | 19940504 |
| EP 624613 | A3 | 19950215 | | |
| EP 624613 | B1 | 20001025 | | |
| R: CH, DE, FR, GB, IT, LI, NL | | | | |
| JP 07233246 | A2 | 19950905 | JP 1994-84651 | 19940422 |
| JP 3075665 | B2 | 20000814 | | |
| US 5412067 | A | 19950502 | US 1994-235534 | 19940429 |
| PRIORITY APPLN. INFO.: | | | JP 1993-108412 | A 19930510 |
| | | | JP 1993-332006 | A 19931227 |

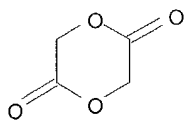
AB. In ring-opening **polymerization** of a **cyclic ester** compound (A) in the presence of a hydroxyl compound as a mol. weight regulator in the reaction system, the mol. weight of polyester can be accurately controlled by previously estimating the amount of free carboxylic acid contained in the **cyclic ester** compound by measuring the difference in elec. conductivity ($\Delta EC0$) of A in hydrophilic organic solvent/water mixture relative to the elec. conductivity of the solvent solution itself. The relationship between the amount of free acid in A and the amount of mol. weight regulator to be added is described by the empirical formula $A + f + L = B$, A, B = consts.; f = amount of free acid from measurements above; L = amount of mol. weight regulator. Polyglycolic acid of weight average mol. weight 172,000 was prepared by calculating f 8.98 mequiv/kg (by measuring $\Delta EC0$ to be 0.50 $\mu S/cm$) and using 0.339% lauryl alc. (based on glycolide feed) as the needed mol. weight regulator.

IT **26202-08-4P**, Glycolide homopolymer **33135-50-1P**, L-Lactide homopolymer **41706-81-4P**, ϵ -Caprolactone-glycolide copolymer **142227-56-3P**, Glycolide-lactic acid copolymer
 RL: **IMF (Industrial manufacture); PREP (Preparation)**
 (preparation of polyester of controlled mol. weight based on the determination of free acid impurities in monomer)

RN 26202-08-4 CAPLUS
 CN 1,4-Dioxane-2,5-dione, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6
 CMF C4 H4 O4



RN 33135-50-1 CAPLUS

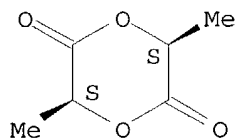
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

Absolute stereochemistry.



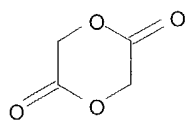
RN 41706-81-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, polymer with 2-oxepanone (9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6

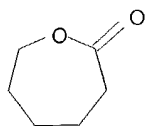
CMF C4 H4 O4



CM 2

CRN 502-44-3

CMF C6 H10 O2

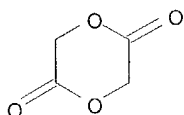


RN 142227-56-3 CAPLUS
 CN Propanoic acid, 2-hydroxy-, polymer with 1,4-dioxane-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6

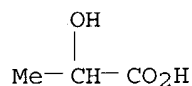
CMF C4 H4 O4



CM 2

CRN 50-21-5

CMF C3 H6 O3



IC ICM C08G063-08
 CC 35-8 (Chemistry of Synthetic High Polymers)
 ST polyglycolic acid controlled mol wt; lauryl alc regulator polyester manuf;
 elec cond free acid impurity
 IT Electric conductivity and conduction
 (for determination of free acid in **cyclic ester** feed
 conversion to polyester of controlled mol. weight)
 IT Polyesters, preparation
 RL: IMF (Industrial manufacture); **PREP (Preparation)**
 (preparation of polyester of controlled mol. weight based on the
 determination of free
 acid impurities in monomer)
 IT **Polymerization**
 (ring-opening, preparation of polyester of controlled mol. weight based on
 the
 determination of free acid impurities in monomer)
 IT 95-96-5, DL-Lactide 112-53-8, Lauryl alcohol
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (mol. weight regulator; preparation of polyester of controlled mol. weight
 based
 on the determination of free acid impurities in monomer)
 IT 26009-03-0P, Polyglycolic acid 26023-30-3P, Poly[oxy(1-methyl-2-oxo-1,2-
 ethanediyl)] **26202-08-4P**, Glycolide homopolymer

33135-50-1P, L-Lactide homopolymer 41706-81-4P,
ε-Caprolactone-glycolide copolymer 142227-56-3P,
Glycolide-lactic acid copolymer

RL: IMF (Industrial manufacture); PREP (Preparation)

(preparation of polyester of controlled mol. weight based on the
determination of free
acid impurities in monomer)

L32 ANSWER 57 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1993:450029 CAPLUS

DOCUMENT NUMBER: 119:50029

TITLE: Biodegradable polymers. 7th Comm. On the mechanism of
ring-opening polymerization of
cyclic esters of aliphatic
hydroxycarboxylic acids by means of different tin
compounds

AUTHOR(S): Dahlmann, J.; Rafler, G.

CORPORATE SOURCE: Forschungsstandort Teltow-Seehof, Projekt.
Nachwachsende Rohstoffe, Teltow, O-1530, Germany

SOURCE: Acta Polymerica (1993), 44(2), 103-7

CODEN: ACPODY; ISSN: 0323-7648

DOCUMENT TYPE: Journal

LANGUAGE: English

AB To elucidate the effect of tin compds. in the ring-opening polymn
. of lactides and lactones, D,L-dilactide was taken as an example, and its
reaction with different tin compds. at a molar ratio of 1:1 as well as the
polymer formation and degradation in dependence of its concentration has been
investigated. Two entirely different reaction courses were observed which
are consequently influenced by compds. with alc. and/or carboxylic OH
groups in different ways.

IT 26680-10-4P 26780-50-7P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of, organotin catalysts for)

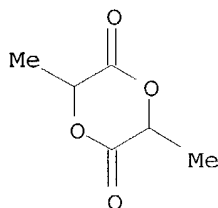
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

CMF C6 H8 O4



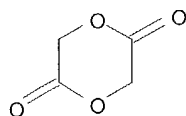
RN 26780-50-7 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 1,4-dioxane-2,5-dione
(9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6

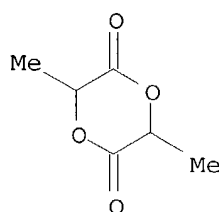
CMF C4 H4 O4



CM 2

CRN 95-96-5

CMF C6 H8 O4



CC 35-7 (Chemistry of Synthetic High Polymers)

ST biodegradable lactide lactone polymer synthesis; organotin catalyst
biodegradable polymer synthesis; ring opening **polymn** organotin
catalyst; dilactide **polymn** tin dioctoate catalyst; diglycolide
polymn tetraphenyltin dibutyldimethoxytin catalyst; caprolactone
polymn dimethylaminotrimethyl stannan catalyst

IT Biodegradable materials

(lactide and lactone (co)polymers, preparation of, organotin catalysts for)

IT **Polymerization** catalysts

(ring-opening, organotin compds., for lactides and lactones)

IT 301-10-0, Tin dioctoate 595-90-4, Tetraphenyltin 818-08-6, Dibutyltin
oxide 993-50-0 1067-21-6 1067-55-6, Dibutyldimethoxytin 2291-82-9

RL: CAT (Catalyst use); USES (Uses)

(catalysts, for ring-opening **polymerization** of lactides and
lactones)

IT 24980-41-4P, ε-Caprolactone homopolymer 26023-30-3P

26680-10-4P 26780-50-7P

RL: **SPN** (Synthetic preparation); **PREP** (Preparation)

(preparation of, organotin catalysts for)

IT 65-85-0, Benzoic acid, uses 97-64-3, Ethyl lactate 100-51-6, Benzyl
alcohol, uses 108-93-0, Cyclohexanol, uses

RL: USES (Uses)

(ring-opening **polymerization** of dilactide by tetraphenyltin in presence of)

L32 ANSWER 58 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1993:409301 CAPLUS

DOCUMENT NUMBER: 119:9301

TITLE: Poly(L-lactide) crosslinked with spiro-bis-dimethylenecarbonate

AUTHOR(S): Grijpma, D. W.; Kroeze, E.; Nijenhuis, A. J.; Pennings, A. J.

CORPORATE SOURCE: Dep. Polym. Chem., Univ. Groningen, Groningen, 9747 AG, Neth.

SOURCE: Polymer (1993), 34(7), 1496-503

CODEN: POLMAG; ISSN: 0032-3861

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Poly(L-lactide) (I) and other poly(lactones) can be crosslinked by ring-opening **polymerization** of the corresponding **cyclic esters** in the presence of a tetrafunctional bicyclic biscarbonate. Spiro-bis-dimethylenecarbonate (II) was synthesized from pentaerythritol and diethylene-carbonate and used to prepare polyester networks for use in biomedical applications. Bulk copolymn. of L-lactide with only small amts. of this crosslinker leads to networks with very high gel percentages of $\leq 100\%$. The initial crystallinity of these crosslinked I, as well as the melting temperature, is very much reduced when compared with the corresponding homopolymer. The degradation of the polymer in vivo is therefore expected to be enhanced and more benign at longer durations. Tensile strength and impact resistance are also greatly influenced by copolymn. with II. Much tougher and stronger materials can be obtained in this way. These favorable properties allow the material to be used in the preparation of degradable implants such as fracture fixation devices.

IT 147965-66-0P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and characterization of crosslinked)

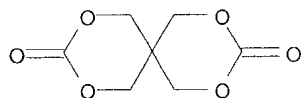
RN 147965-66-0 CAPLUS

CN 2,4,8,10-Tetraoxaspiro[5.5]undecane-3,9-dione, polymer with
(3S-cis)-3,6-dimethyl-1,4-dioxane-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 84056-48-4

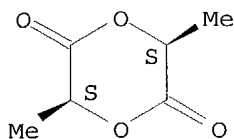
CMF C7 H8 O6



CM 2

CRN 4511-42-6
CMF C6 H8 O4

Absolute stereochemistry.



IT 147965-67-1P 147965-69-3P

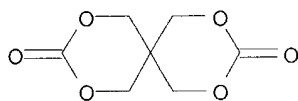
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of crosslinked)

RN 147965-67-1 CAPLUS

CN 2,4,8,10-Tetraoxaspiro[5.5]undecane-3,9-dione, polymer with
3,6-dimethyl-1,4-dioxane-2,5-dione (9CI) (CA INDEX NAME)

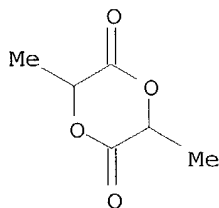
CM 1

CRN 84056-48-4
CMF C7 H8 O6



CM 2

CRN 95-96-5
CMF C6 H8 O4



RN 147965-69-3 CAPLUS

CN 2,4,8,10-Tetraoxaspiro[5.5]undecane-3,9-dione, polymer with
(3S-cis)-3,6-dimethyl-1,4-dioxane-2,5-dione and 1,3-dioxan-2-one (9CI)
(CA INDEX NAME)

CM 1

CRN 84056-48-4

CMF C7 H8 O6

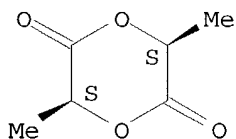


CM 2

CRN 4511-42-6

CMF C6 H8 O4

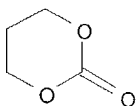
Absolute stereochemistry.



CM 3

CRN 2453-03-4

CMF C4 H6 O3



CC 35-8 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 37, 63

ST polylactide crosslinking spirobisdimethylene carbonate; polylactone crosslinking spirobisdimethylene carbonate; **polymn** lactone spirobisdimethylene carbonate crosslinking

IT Heat of fusion and Heat of freezing

Polymer interaction parameter

(of poly(lactide) crosslinked with spirobisdimethylenecarbonate)

IT Crosslinking

(of polylactones, with spirobisdimethylenecarbonate)

IT Crosslinking agents

(spirobisdimethylenecarbonate, for lactones, network properties in relation to)

IT Polyesters, preparation
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (lactone-based, preparation and characterization of, crosslinked with
 spirobisdimethylenecarbonate)

IT **Polymerization**
 (ring-opening, of lactones, with spirobisdimethylenecarbonate,
 crosslinking in)

IT Virial coefficient
 (second, of poly(lactide) crosslinked with
 spirobisdimethylenecarbonate)

IT **147965-66-0P**
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation and characterization of crosslinked)

IT 84056-48-4P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation and copolymn. of, with lactones)

IT **147965-67-1P 147965-68-2P 147965-69-3P**
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of crosslinked)

IT 115-77-5, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with diethylene carbonate)

IT 105-58-8
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with pentaerythritol)

L32 ANSWER 59 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1992:256308 CAPLUS

DOCUMENT NUMBER: 116:256308

TITLE: Process and catalyst for the **polymerization**
 of **cyclic esters**

INVENTOR(S): Nijenhuis, Atze Jan; Pennings, Albertus Johannes

PATENT ASSIGNEE(S): Stamicarbon B. V., Neth.

SOURCE: PCT Int. Appl., 22 pp.

CODEN: PIXXD2

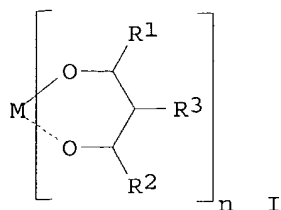
DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|-------------------|-----------------|----------|
| WO 9116368 | A1 | 19911031 | WO 1991-NL63 | 19910419 |
| W: CA, FI, JP, NO, US | | | | |
| RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE | | | | |
| NL 9000959 | A | 19911118 | NL 1990-959 | 19900421 |
| PRIORITY APPLN. INFO.: | | | NL 1990-959 | 19900421 |
| OTHER SOURCE(S): | | MARPAT 116:256308 | | |
| GI | | | | |



AB **Cyclic ester** polymers, useful in biomedical applications, are prepared by ring-opening **polymerization** in presence of chelate catalyst I (M = metal ion; n = 1-4 integer; R1, R2 = alkyl, aryl, cycloaliph.; R3 = alkyl, aryl, cycloaliph., H; and R1-R3 are such that the m.p. is less than the **polymerization** temperature). The monomer/catalyst molar ratio (R) is 1000-300,000. Thus, L-lactide and Zn bis(2,2-dimethyl-3,5-heptanedionate) in 11,250:1 molar ratio was evacuated to 10⁻³ mbar, sealed heated to 110° for 84 h for 99% conversion to polymer with m.p. 202°, melting heat 99 J g⁻¹, and viscosity-average mol. weight 800,000.

IT **9051-87-0P 26202-08-4P**, Glycolide polymer

30846-39-0P, Glycolide-L-lactide copolymer **41706-81-4P**,

ε-Caprolactone-glycolide copolymer **65408-67-5P**

RL: **PREP (Preparation)**

(preparation of, ring-opening catalysts for, chelate compds. as)

RN 9051-87-0 CAPLUS

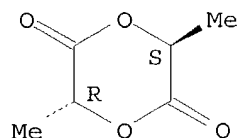
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with
rel-(3R,6S)-3,6-dimethyl-1,4-dioxane-2,5-dione (9CI) (CA INDEX NAME)

CM 1

CRN 13076-19-2

CMF C6 H8 O4

Relative stereochemistry.

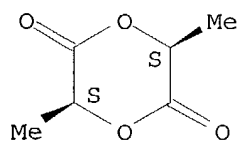


CM 2

CRN 4511-42-6

CMF C6 H8 O4

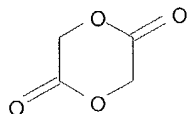
Absolute stereochemistry.



RN 26202-08-4 CAPLUS
CN 1,4-Dioxane-2,5-dione, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6
CMF C4 H4 O4

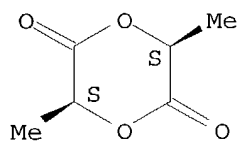


RN 30846-39-0 CAPLUS
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with
1,4-dioxane-2,5-dione (9CI) (CA INDEX NAME)

CM 1

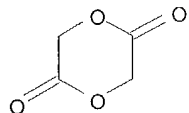
CRN 4511-42-6
CMF C6 H8 O4

Absolute stereochemistry.



CM 2

CRN 502-97-6
CMF C4 H4 O4



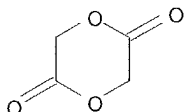
RN 41706-81-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, polymer with 2-oxepanone (9CI) (CA INDEX NAME)

CM 1

CRN 502-97-6

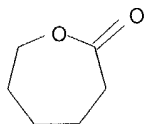
CMF C4 H4 O4



CM 2

CRN 502-44-3

CMF C6 H10 O2



RN 65408-67-5 CAPLUS

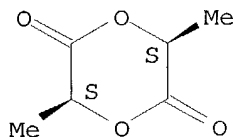
CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, polymer with 2-oxepanone (9CI) (CA INDEX NAME)

CM 1

CRN 4511-42-6

CMF C6 H8 O4

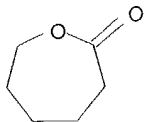
Absolute stereochemistry.



CM 2

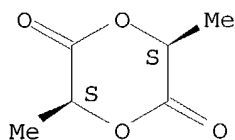
CRN 502-44-3

CMF C6 H10 O2



IT 33135-50-1P, L-Lactide polymer
 RL: **PREP (Preparation)**
 (preparation of, ring-opening, chelate catalyst for)
 RN 33135-50-1 CAPLUS
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3S,6S)-, homopolymer (9CI) (CA
 INDEX NAME)
 CM 1
 CRN 4511-42-6
 CMF C6 H8 O4

Absolute stereochemistry.



IC ICM C08G063-83
 ICS C08G063-85; C08G063-08; C08G064-30
 CC 35-7 (Chemistry of Synthetic High Polymers)
 ST **cyclic ester** polymer chelate catalyst; zinc
 dimethylheptanedionate **polymn** catalyst lactide; ring opening
polymn cyclic ester
 IT Polyesters, preparation
 RL: **PREP (Preparation)**
 (preparation of, ring-opening of **cyclic esters** in,
 chelate catalysts for)
 IT **Polymerization** catalysts
 (ring-opening, chelate compds., for **cyclic esters**)
 IT 16009-86-2 135776-92-0
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst, for ring-opening **polymerization** of **cyclic**
esters)
 IT 9051-87-0P 26202-08-4P, Glycolide polymer
 30846-39-0P, Glycolide-L-lactide copolymer 31852-84-3P,
 Trimethylene carbonate polymer 41706-81-4P, ε-
 Caprolactone-glycolide copolymer 65408-67-5P
 RL: **PREP (Preparation)**
 (preparation of, ring-opening catalysts for, chelate compds. as)
 IT 33135-50-1P, L-Lactide polymer

RL: **PREP (Preparation)**

(preparation of, ring-opening, chelate catalyst for)

L32 ANSWER 60 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1991:450571 CAPLUS

DOCUMENT NUMBER: 115:50571

TITLE: Manufacture of biologically degradable (co)polyesters having controlled molecular weights

INVENTOR(S): Dahlmann, Juergen; Fechner, Klaus; Junghanss, Baerbel; Rafler, Gerald; Rahn, Hans Werner; Ruhnau, Ingrid; Schaubelt, Kristin; Ulrich, Hans Heinz

PATENT ASSIGNEE(S): Akademie der Wissenschaften der DDR, Ger. Dem. Rep.

SOURCE: Ger. (East), 4 pp.

CODEN: GEXXA8

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|----------|-----------------|----------|
| DD 285363 | A5 | 19901212 | DD 1989-330037 | 19890628 |

PRIORITY APPLN. INFO.: DD 1989-330037 19890628

AB Biodegradable (co)polyesters, based on dilactides and diglycolides and having number-average mol. weight of 5000-20,000, are prepared by the ring-opening **polymerization** of **cyclic esters** in the presence of Sn²⁺ initiators by conducting the **polymerization** in the presence of 10-5-10-3 aliphatic polyhydric alcs. as chain-transfer agents. These polyesters have applications as carriers for sustained-release pharmaceutical systems and biodegradable sutures (no data). Thus 18 g D,L-3,6-dimethyl-1,4-dioxan-2,5-dione was homopolymd. in the presence of 10 mg Sn(II) octanoate and 2.6 mol glycerin/mol monomer, producing a polyester having number-average mol. weight 10.3 x 10³ and CO₂H content 74 µequiv/g, vs 21.2 x 10³ and 51, resp., for a control **polymerization** conducted in the absence of glycerin.

IT **26680-10-4P**, D,L-3,6-Dimethyl-1,4-dioxane-2,5-dione homopolymer
26780-50-7P, 1,4-Dioxane-2,5-dione-1-D,L-3,6-dimethyl-1,4-dioxane-2,5-dione copolymer

RL: **IMF (Industrial manufacture); PREP (Preparation)**

(manufacture of, biodegradable, having controlled mol. weight, chain-transfer agents for)

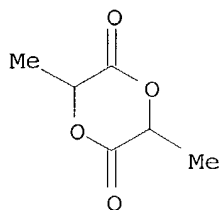
RN 26680-10-4 CAPLUS

CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 95-96-5

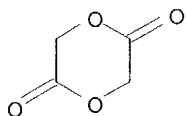
CMF C6 H8 O4



RN 26780-50-7 CAPLUS
 CN 1,4-Dioxane-2,5-dione, 3,6-dimethyl-, polymer with 1,4-dioxane-2,5-dione
 (9CI) (CA INDEX NAME)

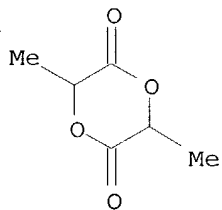
CM 1

CRN 502-97-6
 CMF C4 H4 O4



CM 2

CRN 95-96-5
 CMF C6 H8 O4



IC ICM C08G063-08
 ICS C08K005-05; A61L017-00; A61K047-00
 CC 35-7 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 63
 ST controlled mol wt biodegradable polyester; suture manuf biodegradable
 polyester; glycerol chain regulator polyester manuf; dimethyldioxanedione
 homopolymn glycerol chain transfer agent; sustained release pharmaceutical
 polyester substrate
 IT Polyesters, preparation
 RL: IMF (Industrial manufacture); **PREP (Preparation)**
 (manufacture of, biodegradable, by ring-opening polymerization,

chain-transfer agents for)

IT Chain-transfer agents
(polyhydric alcs., in manufacture of biodegradable (co)polyesters with controlled mol. weight)

IT Alcohols, uses and miscellaneous
RL: USES (Uses)
(polyhydric, chain-transfer agents, for manufacture of biodegradable (co)polyesters with controlled mol. weight)

IT **Polymerization**
(ring-opening, manufacture of biodegradable polyesters by, chain-transfer agents for)

IT 56-81-5, Glycerin, uses and miscellaneous
RL: USES (Uses)
(chain-transfer agents, in manufacture of biodegradable (co)polyesters with controlled mol. weight)

IT 26023-30-3P, D,L-3,6-Dimethyl-1,4-dioxane-2,5-dione homopolymer, SRU
26680-10-4P, D,L-3,6-Dimethyl-1,4-dioxane-2,5-dione homopolymer
26780-50-7P, 1,4-Dioxane-2,5-dione-1-D,L-3,6-dimethyl-1,4-dioxane-2,5-dione copolymer
RL: **IMF (Industrial manufacture); PREP (Preparation)**
(manufacture of, biodegradable, having controlled mol. weight,
chain-transfer
agents for)

L32 ANSWER 61 OF 61 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1970:101382 CAPLUS
DOCUMENT NUMBER: 72:101382
TITLE: Polyimides prepared from carbamic acids
PATENT ASSIGNEE(S): Farbenfabriken Bayer A.-G.
SOURCE: Fr., 11 pp.
CODEN: FRXXAK
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| FR 1576844 | | 19690801 | | |
| DE 1720695 | | | DE | |
| GB 1240291 | | | GB | |
| US 3560446 | | 19710000 | US | |
| PRIORITY APPLN. INFO.: | | | DE | 19671107 |
| | | | DE | 19671204 |

AB Heat-stable polyimides, useful for preparing molded articles and varnishes for metal wires, are prepared by treating a polyfunctional carbamate **ester** with a **cyclic** polycarboxylic acid anhydride. For example, a mixture of 125 g (4-OCNC6H4)2CH2 and 31 g HOCH2CH2OH in 300 ml PhMe was heated 1 hr at 100°, cooled to 30°, a mixture of trimellitic acid anhydride 96, glycerol 18, PbO 0.1, Zn octanoate 0.2, and cresol 700 g added, heated 3 hr at 200°, converted to films, and the films cured at 200-90° to give elastic and transparent

polyimide products.

IT 26427-90-7P

RL: PREP (Preparation)

(manufacture of, ring closure in)

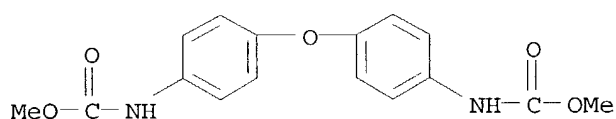
RN 26427-90-7 CAPLUS

CN 1,2,4,5-Benzenetetracarboxylic 1,2:4,5-dianhydride, polymer with dimethyl 4,4'-oxydicarbanilate (8CI) (CA INDEX NAME)

CM 1

CRN 37037-29-9

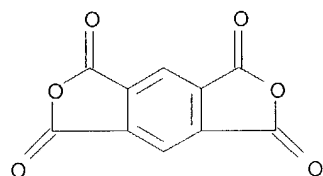
CMF C16 H16 N2 O5



CM 2

CRN 89-32-7

CMF C10 H2 O6



IC C08G

CC 36 (Plastics Manufacture and Processing)

ST polyimides; carbamates polyimides

IT Ring closure

(in **polymerization**, of carbamic acid **esters** with polycarboxylic acid anhydrides)

IT **Polymerization**

(ring closure and, of carbamic acid esters with polycarboxylic acid anhydrides)

IT Imide, poly-

RL: PROC (Process)

(manufacture of, from carbamic acid esters and polycarboxylic acid anhydrides)

IT 1,2,4-Benzenetricarboxylic acid, **cyclic** 1,2-anhydride,

ester with glycolic acid, polymer with dibutyl

(4-methyl-m-phenylene)dicarbamate

Carbamic acid, (4-methyl-m-phenylene)di-, dibutyl ester, polymer with

1,2,4-benzenetricarboxylic acid **cyclic** 1,2-anhydride,
ester with glycolic acid

Glycolic acid, ester with 1,2,4-benzenetricarboxylic acid **cyclic**
1,2-anhydride, polymer with dibutyl (4-methyl-m-phenylene)dicarbamate

Toluene-2,4-dicarbamic acid, dibutyl ester, polymer with
1,2,4-benzenetricarboxylic acid **cyclic** 1,2-anhydride,
ester with glycolic acid

RL: PROC (Process)

(manufacture of, ring closure in)

IT 26427-89-4P **26427-90-7P** 26428-71-7P

RL: **PREP (Preparation)**

(manufacture of, ring closure in)

=>